The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 135, NO. 10 — CHICAGO, ILLINOIS — NOVEMBER 8, 1947

COPYRIGHT, 1947, BY AMERICAN MEDICAL ASSOCIATION

CYSTS, SINUSES AND FISTULAS OF DERMATOLOGIC INTEREST

Chairman's Address

NELSON PAUL ANDERSON, M.D.
Los Angeles

There is a group of cysts, sinuses and fistulas which are of dermatologic importance. While the cure of such lesions may be entirely within the province of the surgeon, their recognition frequently falls to the dermatologist, particularly those in which a clinical diagnosis is not immediately apparent. Further, their dermatologic appearance is at times so atypical that a correct diagnosis often depends on special knowledge of the various malformations and congenital anomalies of development which occur in certain regions of the body. It is worth while for the dermatologist to consider some of these lesions in order that errors in diagnosis and treatment may be avoided.

EPIDERMAL CYST

This condition is practically always mistakenly diagnosed as a sebaceous cyst or "wen." Various other names have been applied, such as atheroma, follicular cysts, squamous epithelial cysts and keratoma, the latter being a term used by Broders and Wilson [1] but which has not gained universal recognition.

True sebaceous cysts are lined with secreting sebaceous cells and contain a fatty or sebaceous material with granules of fat and crystals of cholesterol. There is a peculiar characteristic rancid cheesy odor emanating from this fatty secretion when such a lesion is opened.

In contradistinction, an epidermal cyst generally has little or no odor to its contents unless secondary infection or severe degeneration has occurred. Furthermore, as pointed out by Broders and Wilson, when a fragment of this lesion is burned it presents an odor like burning hair, wool or feathers. Also, fragments of the lesion do not float in water as do the fatty contents of the true sebaceous cyst, and, finally, its contents are not greasy to the touch and may be readily removed from the fingers by washing in cold water.

The microscopic picture is that of thick layers of keratin throughout. However, the periphery or lining consists of stratified squamous epithelium. The central portion frequently falls out, and so the lesion assumes the appearance of a cyst.

The exact origin of epidermal cysts is in doubt. Some authorities believe that they originate either in the duct of the sebaceous gland or in a hair follicle. This point of view is substantiated by the presence of two distinct types of epithelium associated with the sebaceous glands. The sebaceous gland itself is composed of large relatively clear cells which eventually are filled with fat droplets. Disintegration of these fat droplets occurs with the formation of sebum—an oily substance. The ducts of the sebaceous glands, however, are lined with stratified squamous epithelium which on further differentiation forms keratin. This point of view is further strengthened by the frequent finding of keratotic plugs in sebaceous ducts and by the finding of relatively normal sebaceous glands both in the neighborhood of such obstructed ducts and in the region of such cysts. Finally, they occur in persons of the older age group in whom keratinization on the one hand is increased while sebaceous activity on the other hand is lessened. Such a physiologic process tends to foster the development of these epidermal cysts. Confirmatory evidence is furnished by secondary malignant changes which are squamous cell in type rather than glandular or adenocarcinomatous.

These epidermal cysts are generally found in the cutis or corium and are only rarely situated below the cutis in the subcutaneous tissue. Occasionally, such cysts may be attached to the epidermis by a cord or band of epithelial composition. The great majority, however, are not connected with either the overlying epidermis or any cutaneous gland or structure. Therapy is considered along with that for sebaceous cysts.

Degenerative changes occur with considerable frequency in such epidermal cysts. Rupture of the epithelial capsule is common and is accompanied by a foreign body giant cell inflammatory reaction. Fibrosis and relative involution may occur and, while calcification is frequent, true ossification is rare. Malignant degeneration occurs with the development of prickle cell epithelioma.

SEBACEOUS CYSTS

Even with the further advancement of knowledge regarding cutaneous cysts, the term sebaceous cyst is frequently and erroneously used. It must be admitted that at times it is often impossible to differentiate true sebaceous cysts from epidermal cysts. Particularly is this true when infection, inflammation and degenerative changes have taken place. Actually, sebaceous cysts are retention cysts of sebaceous glands, and hence their epithelial lining is composed of secreting sebaceous gland cells. Compared with epidermal cysts, they are rare. Warvi and Gates [2] found only three sebaceous cysts

Read before the Section on Dermatology and Syphilology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. Broders, A. C., and Wilson, E.: Keratoma: A Lesion Often Mistaken for a Sebaceous Cyst, S. Clin. North America **10**: 127 (Feb.) 1930.

2. Warvi, W. N., and Gates, O.: Epithelial Cysts and Cystic Tumors of the Skin, Am. J. Path. **19**: 765 (Sept.) 1943.

among five hundred and sixty-six cutaneous epithelial cysts. A connection with the cutaneous surface as manifested by a small central dimple or pseudocomedo is frequent. The contents of the true sebaceous cyst are of a butter yellow homogeneous consistency and have a rancid odor.

Fig. 1.—Multiple "sebaceous" cysts involving the scrotum.

I regard the multiple cysts occurring on the trunk in association with acne and seborrhea as multiple true sebaceous cysts. They have been variously called steatocystoma multiplex,[3] sebocystomatosis [4] and multiple follicular cysts.[2]

THERAPY OF EPIDERMAL AND SEBACEOUS CYSTS

Because in most instances these lesions are not differentiated, their therapy will be considered together.

Surgical removal and blunt dissection of the cyst under local anesthesia are most frequently used. There are several objections to this procedure in instances in which the cyst is situated on the face or other exposed areas where any type of scarring would be objectionable. Also, in cases in which secondary infection is present surgical removal is impossible without leaving rather pronounced deforming scars.

In the case of uncomplicated—e. g., noninfected—cysts when there is no history of previous infection or inflammation and the cyst is freely movable in the cutis, there are several procedures worthy of consideration.

A procedure which was independently developed with excellent results but for which I claim no originality [5] is as follows:

1. Preliminary sterilization of the overlying skin is accomplished. 2. A local anesthetic made up of 2 per cent procaine and epinephrine is injected beneath the skin over the cyst. After the wheal has been formed, the needle is inserted to a slightly greater depth so that the anesthetic solution is injected into the fibrous capsule surrounding the cyst. Due to hydrostatic pressure this accomplishes with relative ease the same purpose as blunt dissection of ordinary surgical procedures. 3. Then and then only does one incise the cyst, holding it firmly and simultaneously exerting considerable pressure. As the sharp knife is withdrawn there follows an expression of the oily contents of the sebaceous cyst or the waxy white flaky material of the epidermal cyst. With further pressure or rocking intermittent pressure, the sac usually follows. If not, a grasping tenaculum-like instrument is inserted and the bottom of the sac firmly grasped and the entire sac removed by turning it inside out. The results of this procedure have been extremely satisfactory. In most instances, they are such as to defy detection of any previous operative procedure. Its one disadvantage is a small percentage of recurrences when a small fragment of the sac has remained behind. This is compensated for by the fact that operations for recurrence are no more apt to be followed by scarring than the original procedure.

Callaway [6] has devised the following technic for treatment of sebaceous cysts:

1. The cyst is painted with iodine and cleaned with alcohol; using a stylet or small surgical blade, an incision is made directly into the sebaceous cyst through the duct opening.

2. All of the fatty sebaceous material is completely evacuated by pressure.

3. The evacuated cyst is then filled with tincture of iodine. The iodine solution is left in and a small dressing is applied.

4. The patient is observed two or three days later, and, if necessary, the cyst is again evacuated and refilled with iodine. In from three to four weeks the cyst becomes completely fibrosed, appears flat, with the cell lining of the cyst apparently destroyed by the action of the iodine.

Newton,[7] of San Diego, Calif., considers his method suitable for all types of "sebaceous" cysts whether noninfected, acutely infected, adherent to the surrounding tissue or involving the lobe of the ear. Newton's method is as follows:

The roof of the cyst is injected intradermally with the production of a large wheal by a 2 per cent solution of procaine and epinephrine. The anesthetic is then injected into the cyst

Fig. 2.—Synovial cyst causing linear grooving of nail.

sac under pressure, and finally a small amount of the anesthetic is injected under the sac.

The wall of the cyst is then incised with a sharp scalpel or by electrodesiccation, and the contents expressed. Remaining sebaceous material is loosened and removed by forcible swabbing with cotton-tipped applicators. Adhesions and the interlocular partitions of interlocular cysts are broken down at the same time. When all sebaceous material is removed a cotton-

3. Ormsby, O. S., and Finnerud, C. W.: Steatocystoma Multiplex, Arch. Dermat & Syph. **22:** 822 (Nov.) 1930. Sachs, W.: Steatocystoma Multiplex Congenitale: Ten Cases in Three Generations, ibid. **38:** 877 (Dec.) 1938.

4. Weber, F. P.: Two Types of Sebocystomatosis, Urol. & Cutan. Rev. **41:** 492 (July) 1937.

5. Harrington, D. W.: Surgery of Moles, Warts, Nevi and Cysts of the Skin, Am. J. Dermat. **14:** 584, 1910.

6. Callaway, J. L.: A Treatment for Sebaceous Cysts, South. Med. & Surg. **109:** 42 (Feb.) 1947.

7. Newton, H. D.: Personal communication to the author.

tipped applicator soaked with 95 per cent phenol is inserted into the cyst and the sac surface thoroughly coated. An alcohol sponge is used to prevent injury to the skin during introduction of the phenolized applicator. After five minutes, the phenol in the sac is neutralized with alcohol, a drain inserted and a dressing applied. The drain is replaced daily for three or four days. Healing is rapid with collapse of the sac and little or

Fig. 3. Solitary hydrocystoma.

no scar remaining. In many cases the sac becomes loosened and presents at the wound, permitting extraction, but this is not essential. The advantages of the method are (*a*) simplicity of technic, (*b*) avoidance of linear scar, (*c*) ability to destroy cyst involving the entire lobe of the ear or with an adherent sac.

There are other methods of treatment, both old [8] and new.[9] I am familiar with their details but have had no actual experience with them. I have not tried any of these methods in the treatment of the rather deep lying cysts of the nape of the neck which are so often seen in conjunction with acne vulgaris.

In the treatment of infected cysts I have used the following procedure, first described by Fishman,[10] with considerable success.

1. Sterilize, incise and express contents of cyst.
2. One-tenth gram of solid silver nitrate (stick) is placed in the cyst cavity, covered with an occlusive dressing and left for twenty-four hours.
3. In about twenty-four hours, the cyst wall is discolored by the silver nitrate. Hence it is easily recognized and loosened from the surrounding tissue. It is grasped with a hand forceps and easily removed en masse.
4. The cavity is allowed to heal by granulation.

It must be admitted that the caustic action of the excess silver nitrate, which escapes to involve the surrounding skin for a not inconsiderable distance, is at first rather terrifying, but the ultimate results in the few cases in which I have used the method have been most gratifying. I have not yet gathered courage to use it on such infected cysts situated on the face. Nor have I used this method in the noninfected type of cyst.

SYNOVIAL CYSTS

Synovial cyst is the term given to a characteristic pea-sized lesion occurring on the dorsolateral aspects of the fingers and in association with the distal interphalangeal joint. The lesion may occur either proximal or distal to this last joint of the fingers. Those which occur distal to the joint may press on the nail bed and lead to deformity. When such a cyst is punctured it exudes a stringy mucilaginous material. It appears to be a saclike process which is connected with the synovial lining of the joint,[11] although this conception is strongly denied by Gross.[12] While therapy with roentgen rays [13] has been considered the treatment of choice, yet the results of such therapy are at times disappointing. A simple and effective treatment as advised by Lewis [14] is moderate freezing with a pencil of solid carbon dioxide for thirty to forty seconds, with firm pressure.

SWEAT DUCT CYSTS

This group of cysts is associated with the sweat ducts and sweat glands and is to be differentiated from syringoma and hidradenoma. Generally termed a hydrocystoma or sudoriparous cyst,[15] these cystic lesions appear on the cheeks as solitary pea-sized shiny translucent and fairly deep lesions. Occasionally on the upper eyelid they are again shiny translucent and about the size of a B B shot. In one rare instance a hemorrhagic apparently multilocular sweat gland cyst about the size of a pea was removed from the posterior aspect of the ear lobe. The presence of a double row of cuboidal cells in the cyst wall points to its origin from the sweat apparatus.

The larger solitary lesions are best removed surgically; the smaller lesions, while possibly responsive to radiation, can be destroyed by electrodesiccation.

TRAUMATIC EPITHELIAL CYSTS

These cysts are generally associated with previous trauma. The erroneous belief arose that they were the result of direct implantation of the epidermis into the cutis. They have been variously called traumatic, post-traumatic or implantation epidermal cysts.

These cysts may result from trauma in at least three ways: (1) by displacement of epithelial islands; (2) by stimulation of epithelial growth, or (3) by producing

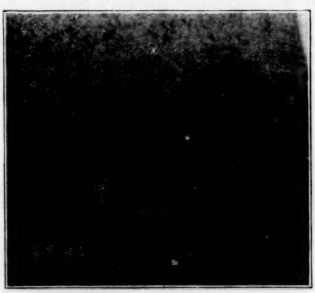

Fig. 4.—Traumatic epithelial cyst on the outer aspect of arm following hypodermic injections.

alterations in the normal structure of cutaneous appendages such as the hair, sebaceous and sweat glands,

8. Lermoyez: Treatment of Wens by Ethereal Injection, Bull. gén. de thérap., Nov. 30, 1883; abstracted, Edinburgh M. J. (pt. I) **30:** 173, 1884.
9. Danna, J. A.: A Simple Technique for Sebaceous Cyst, New Orleans M. & S. J. **98:** 5 (July) 1945; The Treatment of Sebaceous Cyst by Electro-Surgical Marsupialization, Ann. Surg. **123:** 952 (May) 1946.
10. Fishman, J.: Treatment of Infected Sebaceous Cysts, U. S. Nav. M. Bull. **46:** 917 (June) 1946.
11. Eliassow, A., and Frank, S. B.: Pathogenesis of Synovial Lesions of the Skin, Arch. Dermat & Syph. **46:** 691 (Nov.) 1942.
12. Gross, R. E.: Recurring Myxomatous Cutaneous Cysts of the Fingers and Toes, Surg., Gynec. & Obst. **65:** 289 (Sept.) 1937.
13. Jacox, H. W., and Freedman, H. W.: The Roentgen Treatment of Myxomatous Cutaneous Cysts, Radiology **36:** 695 (June) 1941.
14. Lewis, G. M.: Personal communication to the author.
15. Woringer, F.: Sudoriparous Cyst, Bull. Soc. franç. de dermat. et syph. **39:** 882, 1932. Little, E. G. G.: Sections from a Papilliferous Sudoriparous Cyst of the Cheek in a Man, Proc. Roy. Soc. Med. (Dermat. Sect.) **9:** 204, 1916.

especially the latter.[16] Since the palms are lacking in hair and sebaceous glands, these two sources of epithelium are not a factor in those traumatic cysts occurring on the palms and palmar aspects of the fingers. Thus they are seen in postoperative scars and on the fingers and hands of manual workers and rarely at the site of hypodermic injections (fig. 4). When they occur on

Fig. 5.—Traumatic epithelial cyst at base of finger nail producing a linear sulcus.

the palms or palmar aspects of the fingers they are represented by solitary, small to medium pea-sized, rather firm, tense, subepidermal spherical lesions. Occurring under the free end of the finger nail, they may cause moderate tenderness and even erode the terminal phalanx by pressure.[17] If they occur about the base of the finger nails after trauma of manicuring or of scrubbing, as done by surgeons, they give rise to a slight swelling at the base of the nail but a definite linear groove or trough extending the entire length of the nail (fig. 5). Ossification may occur within the cyst and necessitate operative removal, which is the usual treatment for this group. Occasionally those traumatic cysts at the base of the nail will respond to roentgen ray therapy. It is gratifying for dermatologists to note that two widely circulated reports of traumatic epithelial cysts in this country were by members of this specialty.[18]

MUCOUS CYSTS

The so-called mucous retention cysts which are situated on the inner aspect of the lower lip usually opposite the cuspid tooth are very common. Destruction of the cyst by electrodesiccation with the patient under local anesthesia will result in little or no scarring. This procedure must be thorough or a recurrence takes place.

DERMOID CYSTS

The true dermoid cyst is congenital and is located in areas where there is a connection with embryologic fissures and clefts. For a histologic diagnosis, they require the presence of epidermal epithelium and the cutaneous appendages, including hair. They may also contain tissues of mesenchymal origin. They are situated in the cutis or corium, and those of dermatologic interest occur either at the inner or outer canthus of the eye in relation to the bony walls of the orbit, or on the midline of the nose along the lines of closure of the nasal bones. It is important to remember that their complete removal is a formidable and painstaking surgical procedure, for they are usually firmly attached to the bony periosteum by a fibrous cord. This allows a certain freedom of motion which may be deceptive to the examining physician.

OTHER CYSTS

Before leaving the subject of simple cysts, it would seem desirable to point out that as yet there appears to be no satisfactory method of treatment in the group of deep lying infected cystic lesions occurring on the back of the neck. Equally unsatisfactory is the treatment of infected cystic lesions which are found posterior to the lobe of the ear. Both of these groups are found in association with acne vulgaris.

Finally, I would voice a plea for the histologic examination of all cysts. In this way carcinomatous degeneration may be detected, and perhaps eventually one may be rewarded by the finding of those rarities in this country—namely, cysticercosis cellulosae[19] and onchocerciasis.[20]

SINUSES AND FISTULAS

While the terms sinus and fistula are by common usage more or less synonymous, technically there is considerable difference. A sinus may be defined as an open channel, tract or tube, blind at one end and communicating at the other with a cutaneous or mucous surface. A fistula may be defined as an open channel between two body cavities or between a cavity and the skin or between skin and skin. It is lined with either granulation tissue or epithelium and limited by an inflammatory membrane. It is thus readily seen that a

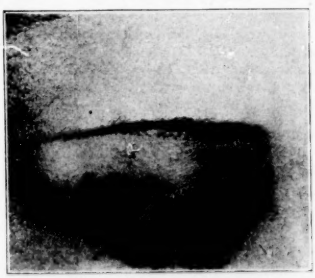

Fig. 6.—Dermoid cyst at outer canthus of eye.

sinus may easily be converted into a fistula by the further extension of the tract from the blind ending to produce another separate independent opening on a cutaneous or mucous surface, and, further, that a deep lying cyst may be associated with the development of a sinus tract.

16. King, E. S. J.: Post-Traumatic Epidermoid Cysts of Hands and Fingers, Brit. J. Surg. **21**: 29 (July) 1933.

17. Cogswell, T. G., and Goodale, R. H.: Traumatic Epithelial Cysts, J. Lab. & Clin. Med. **25**: 576, 1939. Bissell, A. D., and Brunschwig, A.: Squamous Epithelial Bone Cysts of the Terminal Phalanx and Benign Subungual Squamous Epithelial Tumor of the Finger, J. A. M. A. **108**: 1702 (May 15) 1937. Yachnia, S. C., and Summerill, F.: Traumatic Implantation of Epithelial Cyst in a Phalanx, ibid. **116**: 1215 (March 22) 1941.

18. Wien, M. S., and Caro, M. R.: Traumatic Epithelial Cysts of the Skin, J. A. M. A. **102**: 197 (Jan. 20) 1934. Taussig, L. R., and Allington, H. V.: Traumatic Epithelial Cysts, California & West. Med. **42**: 11 (Jan.) 1935.

19. Hu, C. K.; Khaw, O. K., and Frazier, C. N.: Subcutaneous Cysticercosis Cellulosae in Man, Arch. Dermat. & Syph. **21**: 777 (May) 1930.

20. Goldman, L.: American Onchocerciasis, Arch. Dermat. & Syph. **50**: 385 (Dec.) 1944.

The latter is what generally occurs with dermoid cysts in the dorsum of the nose, which are uncommon but are not so rare as the literature would indicate. These are also variously termed congenital median fistula and congenital median sinus, the term sinus and fistula having been rather loosely applied and used interchangeably.

Fig. 7.—Persistent sinus tract of dental origin due to chronic alveolar abscess.

As has been pointed out in an article published in 1933 by Luongo,[21] these dermoid cysts tend to be found in certain definite positions such as on and about the nose: (1) in the midline between the tip of the nose and the lower edge of the nasal bones; (2) over the bridge of the nose; (3) near the tip of the nose, and (4) at the inner angle of the orbit in the nasofacial sulcus.

Most of them give a typical history in that a midline swelling suggestive of a cyst or a nonpigmented mole has been present for years. Either because of an increase in size or for cosmetic reasons the patient consults a physician. The diagnosis of a cyst or mole is made and there is an attempt to treat the lesion either by electrodesiccation or by surgical removal. There results a sinus opening which occasionally discharges cheesy material, pus and blood. A few hairs are generally removed at such times. The conversion of the median dermoid to a sinus opening may also take place spontaneously.

It is generally held that these dermoid cysts, which are located in relation to embryonic fissures, are the result of a pinching off or segregation of cutaneous epithelium during closure of the fissure. This explains the presence of hair, sebaceous glands and epithelium.

Aside from the clinical findings, visualization of the tract and cysts by means of roentgenograms after the introduction of radio-opaque[22] solutions is a helpful measure. The roentgenologic exploration of all such sinus tracts and fistulous tracts is best carried out by the roentgenologist.[23]

The removal of such dermoids on or about the nose is distinctly a surgical procedure.[24]

SINUS

Sinus tracts of dental origin have been adequately discussed by me[25] and by others.[26] It is sufficient to point out that they are usually associated with an alveolar abscess at the root of a tooth, less commonly with syphilis of the mandible and rarely with adamantinoma of the jaw. They may open on the chin, the cheek, the floor of the nose, near the orbit and on the buccal or lingual aspects of the gums or at distant sites, as the neck, breast and thigh.

This condition is also variously termed congenital auricular fistula, sinus preauricularis and fistula auris congenita. It is important to the dermatologist because of the various cutaneous manifestations to which it may give rise. Always congenital and frequently hereditary and familial, it is apparently transmitted as a dominant characteristic according to the laws of heredity.[27] I have observed a family in which the condition could be traced for four generations.

In its simplest form there occurs a small pimple usually situated at the anterior border of the ascending limb of the helix. The sinus pit may be unilateral or bilateral. In others a small sinus occurs, measuring from 3 to 9 mm. in depth. From this sinus opening there may be an occasional offensive discharge. At other times with the closure of the orifice a retention cyst may develop in front of the ear. Finally secondary infection may convert the sinus tract or cyst into a walled abscess which opens either spontaneously or by incision, in which event there develops a solitary granulomatous lesion anterior to the ear. This always is in relation to and communicates with the insignificant sinus opening above. At times, as the result of repeated infections, there develops an extensive area honeycombed with fistulous epithelialized tracts amidst a mass of granulation tissue. This may produce a lesion which must be differentiated from lupus vulgaris. Actinomycosis is often erroneously diagnosed because of the finding of a pseudo ray fungus in potassium hydroxide preparations. The culture of such lesions is without value.[28]

Fig. 8.—Congenital preauricular sinus (above) with formation of preauricular fistulous granuloma.

21. Luongo, R. A.: Dermoid Cyst of the Nasal Dorsum, Arch. Otolaryng. **17**: 755 (June) 1933.
22. Vermeulen, B. S.: Congenital Fistula and Dermoid Cysts on the Dorsum of the Nose, Acta oto-laryng. **16**: 48, 1931. Benjamin, C. E.: Congenital Epidermal Fistulae and Cysts of the Nasal Bridge, ibid. **24**: 284, 1936.
23. Gage, H. C., and Williams, E. R.: The Radiological Exploration of Sinus Tracts, Fistulae and Infected Cavities, Brit. J. Radiol. **16**: 8 (Jan.) 1943; reprinted, Radiology **41**: 233 (Sept.) 1943.
24. New, G. B., and Erich, J. B.: Dermoid Cysts of the Head and Neck, Surg., Gynec. & Obst. **65**: 48 (July) 1937.
25. Anderson, N. P.: Persistent Sinus Tracts of Dental Origin, Arch. Dermat. & Syph. **35**: 1062 (June) 1937.
26. Wende, R. C., and Solomon, H. A.: Cutaneous Fistulas of Dental Origin, Arch. Dermat. & Syph. **46**: 665 (Nov.) 1942.
27. Schüller, J.: Hereditary Transmission of Fistula Auris, Specifically Auriculae Congenita, München. med. Wchnschr. **76**: 160 (Jan. 25) 1929.
28. Stokes, J. H., in discussion of Corson, E. F.: An Unusual Case of Cyst, Arch. Dermat. & Syph. **23**: 355 (Feb.) 1931.

There may be other sites about the ear for this sinus. Thus it may be found in the crus of the helix, the lobe of the ear, the upper posterior rim of the ear and rarely in the cavum conchae and postauricular areas.[29]

CONGENITAL PREAURICULAR SINUS

There is a frequent association of this developmental defect with other congenital malformations such as branchial fistulas of the neck, hypospadias and congenital absence of the tear duct.

Treatment when indicated consists in the removal of the epithelialized fistulous tract by dissection if it is simple and well localized. When multiple intercommunicating tracts are present it is best to inject methylene blue into the sinus opening on two or three consecutive days prior to operation but not just before this procedure.[30] All fistulous tracts then may be easily seen and traced when they are laid open by the high frequency cutting current.[31] After this the epithelial lining is destroyed by monopoiar electrodesiccation. This procedure is followed by curettement, and the wound is allowed to heal by granulation.

CONGENITAL SINUSES OF THE LIPS

Both unilateral and bilateral pinpoint and larger slitlike openings occur on the lower lip. If bilateral there is one opening on either side of the midline. The sinus tracts are generally 1 to 1.5 cm. long and extend downward and inward toward the midline, generally ending in a blind pocket immediately under the mucous membrane of the inner surface of the lip. Here they may be represented by two saccules.

These bilateral lip sinuses are usually called fistulas and, though rare, tend to be familial[32] and are often accompanied by other deformities such as cleft palate and hair lip.[33]

The solitary midline sinus occurring on the upper lip just beneath the columella of the nose is the external manifestation of a deeper lying dermoid cyst.

EPIDERMAL FISTULA

There is a definite and not too uncommon group to which I have applied the term epidermal fistulas. In its simplest and most common form it is seen about the face, neck, buttocks and inner aspects of the thighs and less commonly about the breasts and axillas. The process either originates in the double comedos of a severe acne vulgaris or follows a process akin to hidroadenitis suppurativa. To relieve this condition the overlying epithelial bridge must be cut close to the normal skin at each end of the cutaneous bridge.

In other instances, especialy about the cheeks, chin and sides of the neck, the epidermal fistula is associated with ingrown hairs, either with or without an associated previous acne vulgaris. The lesions may be single or multiple and about the size of a large pea. On close examination one finds two distinct openings, from one or both of which a purulent or fatty material may be expressed. Careful probing will demonstrate that these two openings are connected with each other by an epithelium-lined fistulous tract. With the probe left in place the lesion is anesthetized and incised to expose the entire tract. At this time one or two long curved hairs are generally found and easily removed.

The epithelial lining of the tract is destroyed by electrodesiccation followed by curettement. Further electrodesiccation is done in the small cutaneous tabs, one on either side of the tract. The cosmetic result is excellent.

COMMENT

When persistent sinuses or fistulas are present the dermatologist must consider the following causes: (1) fistulas or sinuses which usually develop in connection with vestigial and developmental anomalies—e. g., dermoid cysts of the dorsum of the nose or in the sacrococcygeal region; (2) the presence of a deep seated infection in or about bony structures of the teeth—e. g., persistent sinus tracts of dental origin; (3) epithelialization of the lining of the sinus or fistulous tract (this is significant because epithelial or mucous surfaces will not grow together or undergo fusion); (4) insufficient or inadequate drainage (this also occurs in persistent sinus tracts of dental origin; when remedied by extraction of the offending tooth, drainage is secured and the infected epithelialized tract heals spontaneously); (5) the presence of a deep lying foreign body (this includes such substances as glass, porcelain, bullets, thread and bone); (6) the presence of certain types of specific infection of the tract wall such as actinomycosis, tuberculosis, syphilis and venereal lymphopathy, and (7) the presence of malignant growth in the tract wall (this may be primary but is more often secondary).

The dermatologist should also be familiar with the cutaneous manifestations of branchial cysts and fistulas, thyroglossal duct cysts and fistulas and the various fistulas occurring in the umbilicus. Above all, the sinuses and fistulas which develop about the anus, the perineum, the buttocks and the sacrococcygeal region, especially in connection with pilonidal cysts, are numerous, complicated and at times confusing.[34] This great group is of primary surgical interest.

SUMMARY

A number of different cystic lesions occurring on the cutaneous surface and possessing dermatologic interest have been briefly considered. Sinus tracts and fistulous tracts with complicating cutaneous lesions have been discussed. The causes of the persistence of such sinuses and fistulas are briefly reviewed.

29. Congdon, E. D., and others: Human Congenital Auricular and Juxta Auricular Fossae, Sinuses and Scars (Including the So-Called Aural and Auricular Fistulae) and the Bearing of Their Anatomy upon the Theories of Their Genesis, Am. J. Anat. **51**: 439 (Nov.) 1932.

30. Dingman, R. O.: Congenital Preauricular Sinus, Arch. Otolaryng. **29**: 982 (June) 1939.

31. Havens, F. Z.: Congenital Branchiogenic Preauricular Sinus, Arch. Otolaryng. **29**: 985 (June) 1939.

32. Ludy, J. B.: Congenital Fistulas of the Lower Lip, Arch. Dermat. & Syph. **38**: 151 (July) 1938.

33. Kahn, L. M.: Congenital Bilateral Fistulae of the Lower Lip, Am. J. M. Sc. **223**: 146 (Aug.) 1913. Madelung: Two Rare Malformations of the Face, abstracted J. Laryng. & Rhin. **2**: 332, 1888.

34. Smith, N. D.: Common and Rare Sinuses or Fistulas Which Occur in or Near the Anus, S. Clin. North America **19**: 1021 (Aug.) 1939. Nesselrod, J. P.: Anal, Perianal and Sacrococcygeal Sinuses, Am. J. Surg. **56**: 154 (April) 1942.

17-Ketosteroids.—It is now well known that testosterone and certain steroids from the adrenal cortex are metabolized in the organism and eliminated in the urine in the form of steroid compounds with a ketone group located at position 17 of the molecule. Consequently the assay of these compounds in the urine is of considerable value in investigating the activity of the adrenal cortex and the testes. It is generally accepted that the adult male eliminates, on the average, about 15 mg. in twenty-four hours, and it is estimated that about 10 mg. of this is derived from the adrenals and 5 mg. from the testes.—Prados, M., and Buddick, B.: Depressions and Anxiety States of the Middle-Aged Man, *The Psychiatric Quarterly*, July 1947.

PHYSICAL MEDICINE IN THE PREVENTION AND TREATMENT OF ATHLETIC INJURIES

HERMAN J. BEARZY, Capt., M.C.
Athletic Team Physician, United States Military Academy, and Chief of Physical Medicine, Station Hospital
West Point, N. Y.

The conscientious, intelligent care of the athlete is one of the most vital responsibilities of those connected in an official capacity with the conduct of competitive sports. Competent coaching and medical supervision of all organized sports are recognized by most of the universities, colleges and professional organizations of the country as the most effective measures in the control of athletic injuries.

The gradual evolution of the unorganized, uncoached, unattended teams of the 1880's to the present well coached and medically supervised teams had its inception in 1890, when Harvard University appointed Dr. William M. Conant, as its athletic team physician to work in conjunction with the football coach. This development continued to increase through every decade, so that now there are few schools without the services of a physician.

Under the stress of intense competition and the desire to "win them all," coaches and athletic directors began to pay greater attention to the physical condition of their athletes. Trainers were hired to condition the athletes, and systems of preseason conditioning and toughening drills were introduced. Uniforms and protective pads were fashioned to give maximum protection to the athlete. The present trend in the larger universities is that the control of injuries and the development of good athletic teams must go hand in hand. Lloyd, Deaver and Eastwood[1] have found that the incidence of injuries is definitely related to the years of training and experience of the coach. Today most of the colleges and many of the high schools have well equipped training departments and employ full time trainers to assist the team physician in the care of their injured athletes. The training department is a special room or several rooms devoted to the treatment and reconditioning of athletic injuries. It is usually situated in the vicinity of the dressing room so as to be in close proximity to all athletes. This department should possess adequate facilities for physical medicine, a room for minor surgery and first aid, a splint room for fractures, a reconditioning room and a solarium. The department should be under the direct supervision of the team physician, who must make the decisions as to whether the athlete can be treated in this department or whether hospitalization is required. The trainer should be a person who has participated in some form of athletics and who has had some training in physical education, first aid and physical medicine. He is the team physician's "right hand man" in carrying out the prescribed treatments.

A statistical study of athletic injuries conducted by Stevens and Phelps[2] showed that the most frequent injuries were those of joints, muscles and bones. The same study demonstrated that the most frequently injured parts of the body were as follows, in order of their frequency: knee; ankle; shoulder; leg; thigh; hand; head; chest and ribs; hips—pelvis; nose; acromioclavicular joint; back; foot, and the neck. Thorndike's[3] report on the number and types of injuries sustained in organized sports at Harvard University for the five years beginning in 1932 and ending in 1937 gave the following results:

Sprains	638	Fractures, dislocations	305
Strains	385	Lacerations, abrasions	313
Simple contusions	313	Inflammations, infections	364
Muscle contusions	565		

PHYSICAL AGENTS USED IN THE PREVENTION AND TREATMENT OF ATHLETIC INJURIES

1. *Exercise.*—In view of the frequency of injuries to the ankle, knee, hand and shoulder joints, emphasis is placed on a series of special preseason exercises that aim to strengthen these joints. Systematic calisthenics and other "toughening" drills, started several months before the season begins, will prepare these joints to withstand the severe strain that they will undergo. General exercises involving all parts of the body are used to get the athlete in "condition." Therapeutic exercises are used in the treatment and reconditioning

Fig. 1.—*A*, shoulder wheel, for the rehabilitation of injuries of shoulder and arm. *B*, stationary bicycle, for strengthening weakened knees, quadriceps and ankles. *C*, wrist roller, for injuries of the hand, wrist and fingers.

of the injured athlete. Passive, active, active assistive, active or free and active resistive, aid in the restoration of normal function to the injured part. Heavy resistive exercises are given with mechanical devices such as the stationary bicycle, shoulder wheel, stall bars, bar bells, cable stretchers and chest weights, to stabilize the weakened joints by increasing muscle strength and tone (fig. 1).

2. *Cold.*—Local applications of cold are used chiefly in the treatment of athletic injuries where early vasoconstriction is desired. Among these are injuries to soft tissue such as contusions, sprains and strains, when the trauma has been sufficient to cause extravasation of blood and lymph into the tissues. For acute inflammations and congestions, cold applications are often employed to produce vasoconstriction and to relieve pain. Cold therapy is applied by using ice bags, cold water baths or cold compresses for a period of about twenty-four to forty-eight hours, and should then be followed by heat therapy.

1. Lloyd, F. S.; Deaver, G. D., and Eastwood, F. R.: Safety in Athletics, Philadelphia, W. B. Saunders Company, 1936.
2. Stevens, M. A., and Phelps, W. M.: The Control of Football Injuries, New York, A. S. Barnes & Company, 1933.
3. Thorndike, A., Jr.: Athletic Injuries: Prevention, Diagnosis and Treatment, Philadelphia, Lea & Febiger, 1938.

3. *Heat.*—Heat is used to increase the blood supply to the injured tissues and thus aid in the absorption of the fluid and the cellular debris that clog up the intercellular spaces following trauma. The fluid and debris must be absorbed into the blood and lymph channels before they become organized into fibrous tissue and before they produce a pressure necrosis on the surrounding tissue. Heat, to be of the greatest value, must be started immediately after cold therapy, hours, rather than days, after the injury, for organization of the exudate begins at an early date.[4] Heat is applied by several methods, such as baths, compresses, medical diathermy, radiant heat, chemical heating pads and electric heating pads (fig. 2).

Fig. 2.—*A*, radiant heat baker, for injuries of the lower part of the back. *B*, short wave diathermy with the "pancake" type of condenser plate. *C*, the paraffin bath, for injuries of the hand.

4. *Massage.*—Manual massage consisting of effleurage, pétrissage and friction should be used after the application of heat. It should first be of a light superficial stroking nature, and as recovery progresses, deeper kneading and stroking should be used. Massage acts as a mechanical aid to the flow of venous blood and lymph. Krusen [5] stated that even the lightest touch will empty the superficial veins and lymph vessels of an extremity, and that with superficial stroking massage applied immediately to an extremity which has sustained a fracture, the swelling will only be transitory. Athletic massage or "rubdowns" consisting of deep stroking movements and kneading are given to athletes after a strenuous game or workout.

5. *Ultraviolet Therapy.*—During the winter months, a solarium should be used to provide ultraviolet radiations for the athlete. Exposure to ultraviolet rays helps increase bodily vigor and general well-being [6] (fig. 3).

ATHLETIC INJURIES AMENABLE TO PHYSICAL MEDICINE

Athletic physical disabilities which are amenable to physical medicine may be classified into two major groups:

(*a*) *Trauma of Soft Tissues.*—Under this classification may be listed the joint sprains, muscle strains and contusions. The pathologic processes which develop are constant, but their extent depends on the degree of trauma and the early treatment. Trauma to soft tissues produces torn and thrombosed blood vessels, lacerated tissue infiltrated by hemorrhage, an inflammatory exudate with its cellular constituents, and edema due to the circulatory and lymphatic obstruction. As the pathologic process develops, swelling takes place, resulting in pain and muscular spasm. If this swelling is allowed to continue, the pressure in the intracellular spaces becomes high enough to limit further extravasation. This increased pressure, although it does serve a useful purpose in limiting the amount of swelling, if allowed to progress to this point will impede the return of a good blood supply so necessary in the healing process.

With a correct understanding of the pathologic changes taking place, physical therapy can be instituted in a logical manner in the following soft tissue injuries.

1. Sprains: Sprains are the commonest type of athletic injury, and even in public life there is hardly an adult who has not experienced a sprain in one or more joints at some time in his life. Thorndike [6] defined a sprain as a "partial or complete tear or stretching of one or more ligaments about a joint caused by a sudden twisting or wrenching of the bones which constitute that joint." With the resultant trauma to the joint comes a concomitant hemorrhage and a transudate of edema from circulatory and lymphatic obstruction.

Treatment. The immediate treatment of all sprains is focused on the control of hemorrhage and the extravasation of fluid into the tissues. If the exuding of fluid into the tissue spaces is to be prevented, it seems only logical that the blood and lymph supply to the part must be temporarily diminished. The larger the extravasation accumulated, the longer the period of absorption, so that in treating athletes whose seasons are short and who are valuable to their teams, the physician must race against time and return the athlete to his team as soon as possible. Early applications of cold compresses to the rested joint will cause a constriction of the torn vessels and thus decrease the hemorrhage and transudate. A pressure bandage or dressing should follow the cold therapy, and the injured part should be put to rest in an elevated position for at least twenty-four to forty-eight hours. To fulfil its purpose, this early treatment must be continued until the extravasation of fluid has ceased.

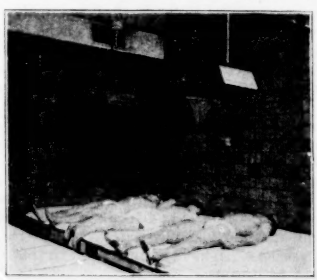

Fig. 3.—Solarium with ceiling mercury vapor lamps.

4. Murray, C. R.: Proper Plan of Physical Therapy in the Treatment of Fractures, J. A. M. A. **97**: 235 (July 25) 1931.
5. Krusen, F. H.: Physical Medicine, Philadelphia, W. B. Saunders Company, 1941.
6. Mennell, J. B.: Physical Treatment by Movement, Manipulation and Massage, Philadelphia, P. Blakiston's Son & Co., 1934.

Once the extravasation has ceased, definitive treatment can be instituted. Heat should now be applied to increase the circulation to the injured part and thus aid nature in bringing about repair as rapidly and with as little permanent change in the tissues as possible. A satisfactory method of applying heat to the sprain, if the anatomic position of the injury will allow, and if a fracture is not present, is the use of the whirlpool bath. Two or three thirty minute treatments should be given daily with the temperature of the bath ranging between 105 and 110 F. (40.6 to 43.3 C.). Contrast baths with the temperature of the cold water at 50 to 65 F. (10 to 18.3 C.) and the hot water at about 100 to 110 F. (37.8 to 43.3 C.) should be used on alternate days with the whirlpool bath. Following the use of heat, gentle stroking massage above and below the swollen joint should be given. After several days of forced rest, passive and active assistive exercises are instituted, but no weight bearing is allowed if the knee, ankle or foot is involved. In about four to six days the degree of massage may be increased and active resistive exercise started. All weight-bearing joints should be supported with adhesive strappings before any locomotion is attempted. Under such a program athletes with badly sprained ankles, feet, knees or shoulders have returned to playing varsity football in ten to fourteen days. It is axiomatic that "once a sprain, always a sprain," so that the joint will need a supportive bandage whenever used for any vigorous exercises.

2. Strains: A strain is an injury to a muscle or tendon. Masquerading under the term "pull," these injuries are frequent in track men, especially sprinters. The injury is due to an incoordinate reaction and imbalance of the protagonist and antagonist group of muscles. The tissue is actually torn. Rupture may occur at the origin, middle or insertion of the muscle. The degree of tear may be mild, with only a few muscle fibers torn, to a complete rupture of the whole muscle or tendon. With the rupture of these individual fibers, hemorrhage occurs, with pressure on the adjacent intact fibers. The result is pain and limitation of function.

Treatment. In the process of repair first there is formation of hematoma, then absorption of hematoma and then healing by fibroblastic repair of the torn area. Rest, elevation of the part if possible, cold packs and compression bandages should be instituted to control hemorrhage and minimize the size of the hematoma. Surgical treatment should be given immediately if the tear is complete, but in athletes and young persons a complete tear is not common. Radiant heat or hydrotherapy can be used for superficial muscle strains, but for the deep lying muscles short wave diathermy has proved the most effective method of producing hematoma absorption. After the use of heat, light stroking massage, followed in a few days by heavy stroking and friction, should be applied to the area. Adhesive strapping should be used to support any strained back and all strenuous exercises should be avoided for at least two to four weeks. Normal functional tests must not be made on any strained muscle until complete repair has taken place.

The ultimate repair of torn muscles or tendon tissue is by scar tissue, so that some loss of function in the involved muscle is to be expected. Since scar tissue has such a poor blood supply, it will be necessary for the athlete to take twice the amount of time to "warm up" before exerting a maximum contraction of his muscles. Failure to "warm up" properly will result in a rupture of the scar tissue and adjacent muscle fibers.

3. Contusions: A contusion is a bruising of the tissues produced by some form of external violence. It may be superficial, involving the skin and subcutaneous tissue, or deep with damage to the muscles, nerves, joints or viscera. Immediately after the trauma there are pain, tenderness and loss of function. If the trauma has been severe enough to rupture capillaries, hemorrhage and swelling will result, and if continued function is permitted, hemorrhage increases.

One of the commonest forms of contusion, especially in the contact sports, is that of the thigh muscles. If this condition is not treated properly, traumatic myositis ossificans may develop. This ossification of the hematoma should be suspected in all cases of deep muscle contusions that do not respond to therapy and can be confirmed on roentgenographic examination.

Treatment. The general principles of treatment for all contusions are those of sprains and strains. Rest, with the part elevated if possible, the early application of cold compresses and a compression bandage will reduce the amount of swelling and hemorrhage and alleviate some of the pain. Radiant heat or the whirlpool bath may be used for the superficial contusions, but diathermy should be applied to the deeper ones. Massage must be avoided over the contused area for several days, but light stroking movements should be given to the surrounding tissues. Heavy massage must be avoided over the deeper muscle contusions for fear of producing myositis ossificans. After two or three days of rest, the patient should be instructed to use the injured muscle but should be prohibited from participating in all contact sports. All contusions of soft tissue must be protected against repeated trauma, either by insisting on absolute rest (to be avoided) or wearing protective devices for the injured part.

(*b*) *Injury to the Skeletal System.*—Thorndike's survey[2] showed the following number and types of fractures occurring in organized sports at Harvard University: Finger and hands, 87; face, 36; wrist, 27; leg, 23; foot, 17; spinous process, 12; forearm, 10; ribs, 9; shoulder, 8; humerus, 2; elbow, 1, and chest, 1. The same survey presented the following types of dislocations: shoulder, 25; fingers and hands, 16; ribs, 4; elbow, 3; ankle, 3, and knee, 2.

1. Fractures: In the presence of fractures the damage to soft tissues near the site of the fracture may be as great as or greater than that to the bone. In view of this damage to soft tissue, the measures of physical therapy applied in the "after-treatment" of fractures should be applied long before the splints are permanently removed and many days before good union of bony parts is obtained.[5] Mennell[6] stated that light stroking massage applied before reduction is often valuable in obtaining relaxation and thus facilitates reduction. After reduction, the fracture should be placed in a plaster cast which should be bivalved so that heat and light massage may be given in the region of the fracture without disturbing the position of the reduced fragments. The joints adjacent to the fracture site should be mobilized by using gentle passive movements. Such movements will prevent stiffness and atrophy of the supporting muscles. With such facilities available and with the postreduction and subsequent bone repair checked by roentgen rays, the convalescent period can be shortened and good end results produced.

2. Dislocations: The treatment of dislocations is similar to that of sprains. After reduction, local cold therapy is applied for at least one hour; then the joint is supported with a firm compression bandage and

immobilized. Within twenty-four to forty-eight hours heat and light massage should be started. In seven to ten days passive and active assistive exercises are given. In two or three weeks active resistive and heavy resistive exercises are used to strengthen the supporting muscles and ligaments. All movements which tend to cause redislocations should be avoided for at least three to four months. Heavy resistance exercises should be continued for six to twelve months so as to hypertrophy and strengthen the supporting muscles and thus prevent redislocations.

SUMMARY

Physical medicine has played an important role in the prevention and treatment of athletic injuries. Through the use of preseasonal conditioning exercises and calisthenics, various structures can be strengthened and conditioned to meet the severe stresses and strains that they will undergo in the athletic contests. Cold therapy, heat therapy, massage and remedial exercises aid in restoring maximum function after many types of injuries. By the proper use of physical agents, the convalescent period is decidedly reduced and the athlete is able to return to his competitive sport in good condition.

TWENTY-FIVE YEARS OF RADON TREATMENT OF CANCER OF THE BLADDER

BENJAMIN S. BARRINGER, M.D.
New York

The following history of a case is taken from the 1915 files of the Memorial Hospital. It is the record of the first case of cancer of the bladder cured by radium therapy at this hospital and is one of the earliest cases reported anywhere.

Mrs. C. A. G., aged 69, first came to the Memorial Hospital on Dec. 1, 1915, with a history of painful and frequent urination for a year and hematuria for the past six months. Cystoscopic examination revealed a large, red cauliflower growth with grayish necrotic areas over the left ureteral orifice. A biopsy specimen was obtained through the cystoscope. Dr. Ewing's report stated: "The section was of a small mass of tumor tissue 2 mm. in diameter. It showed the structure of a small alveolar carcinoma, much inflamed, with dilated blood vessels. The cells were clear and irregular in size, with large hyperchromatic nuclei arranged in small groups. The stroma was scanty." On Jan. 14; 1916 I put 100 millicuries of screened radium in the bladder and left it in eight hours. The tubes of radium were contained in a piece of rubber tubing tied at both ends and attached to a string, by which they were withdrawn through the urethra. The patient returned to her home the next day. She had some pain in the bladder and urinary frequency for five days. On Feb. 4, 1916 cystoscopic examination disclosed no tumor, and the previously obscured ureter was in plain sight, covered by normal mucous membrane. Dr. Keyes saw the bladder at this time. On March 3, 1916 two small papillomas of the urethra were present, which were fulgurated. On April 28, 1916 the patient complained of slight pain at the end of urination. Cystoscopic examination showed cystitis with white leukoplakial spots over the base of the bladder. There was no tumor. On Dec. 19, 1916 examination with the cystoscope revealed over the left ureter a large white scar which was as large as a 50 cent piece. On Jan. 24, 1918 no tumor was detected by cystoscopic studies. In October 1926 the patient died suddenly while at the supper table. Her daughter reported that there had never been a return of the patient's bladder trouble.

Read before the Section on Urology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

Subsequently this inexact method of the application of radium to tumors of the bladder was modified; until finally the present method of the implantation of screened radon seeds by means of needles became the method of choice, either through the cystoscope or through the cystotomy wound. This method has often been described. The radon seeds of preferably 1.5 millicuries should be placed about 0.75 cm. apart or nearer if the seeds are weaker. They should go to the edge of the tumor and not beyond. The reason for this is that the radiation effect extends in each direction 0.5 cm. beyond the seed. The depth of implantation of the seed depends on the individual case. If there is no induration of the tumor base then the seeds are implanted just beneath the surface. If there is induration then the seeds must be inserted more deeply.

Today a cleancut tabulation of the different forms of cancer of the bladder to which radium implantation is peculiarly the method of choice is important because of various confusing ideas, even from those urologists who have had the opportunity to use radium extensively. Such tumors are those of the lower part of the bladder situated near or on the trigone or ureteral orifices or internal urethra. All classes of vesical cancer are included: infiltrating and papillary and all grades from 1 to 4; in this group I have always included papillomas with atypical cells.

The tumors which should be removed by partial excision of the bladder are those of the bladder vault, where excision is easy and practicable. This includes all classes and all grades of vesical cancer. Whether the removal should be intraperitoneal or extraperitoneal depends on the particular case.

When the implantation of radium is indicated the urologist has a choice of the cystoscopic or open operation method. Which one is to be used depends on the experience of the urologist and the size and position of the tumor. The cystoscopic method is certainly a much neglected one and is of value particularly in small postoperative recurrences. It is applicable to either papillary or infiltrative cancers. The most frequent cause of failure of the cystoscopic method is the implantation of too few seeds placed too far apart. Seeds even 0.25 cm. apart do no harm. Cystoscopic treatments are repeated approximately once a month until the entire tumor is white slough.

The implantation of radium in tumors covering a ureteral orifice is a mental stumbling block to many urologists. Such tumors are treated exactly as if they were situated in any other portion of the bladder. The complication of the narrowing of the ureter by the implantation of radium or by the tumor is handled by an indwelling ureteral catheter or, if this is impossible, by watchful waiting. This implies cystoscopic examination soon after the operation, an attempt to catheterize the obstructed ureter or even reimplantation of the ureter in the vault of the bladder.

The follow-up treatment and handling of bladders which have had radium implantation often determines whether or not the tumor will be controlled. Radium therapy unquestionably causes severer complications than those which follow the operative removal of a tumor. This is peculiarly true of the bad infiltrative type of tumor in which there is little hope of cure. Such complications are inflammation, slough and the formation of stone. The urologist's training and experience enables him to determine the difference between living tumor, stone formation or postradium slough.

Other than radium therapy, the methods which are used to control vesical tumors are operative removal of the tumors and total cystectomy.

The reports on the surgical removal of cancers of the bladder, as practiced by the late Edwin Beer [1] and Verne Hunt,[2] speak for themselves. Each had impressive series of cases. Each reported, I believe, some 30 per cent of five year survivals in cases selected for their possibilities of surgical removal. Much better results were reported by Beer in a small series on "Five Year Cures in Malignant Tumors." [1] "By operative excision" of "infiltrating, papillary carcinomas involving the bladder wall" there were "10 cases cured . . . representing 55.5 per cent of cases so treated." "Infiltrating solid ulcerating . . . diffusely involving the bladder wall, 14 cases (were) cured by extensive resections . . . representing 40 per cent." As to total cystectomy, it is obvious why this operation should be seriously considered as a means of curing the many vesical tumors incurable by other methods. One cannot hope to evaluate the place total cystectomy should occupy in the cure of tumors of the bladder until one has the answers to three questions: First, in exactly what class of cases should total cystectomy be the operation of choice; second, what is the operative mortality of total cystectomy, and third, what are the five year survival rates after this operation? There ought to be a number of urologists who have a large enough series to be able to give the answers to these questions.

My impression, gained from experience with what radium can do and the reports of Beer and Hunt indicating what surgical removal can do, is that total cystectomy should be reserved for tumors which have many points of origin throughout the bladder, such as papillomas, papillary carcinomas and infiltrating carcinomas.

For the large single infiltrative cancers which occupy a large part of the bladder and extend down to the vesical base I doubt if resort to total cystectomy can result in more cures than any other method. Such tumors are usually incurable by any known means.

PATHOLOGIC ESTIMATE

The end results of any method of treatment are based on the pathologic examination of the tumor so treated. This is not as simple as it sounds. When a vesical tumor is to be treated by radium one obtains a specimen from the projecting part of a papillary tumor and possibly from the base of an infiltrating tumor. The entire tumor is never obtained for pathologic examination. One therefore has to estimate the relation between the diagnosis given by the pathologic study and the diagnosis as shown by the clinical examination. This is often difficult and obviously subject to some error.

The clinical estimation of a vesical tumor seen through the open bladder is a much neglected procedure. By careful examination more information often may be obtained as to the complete pathologic process than by examination of the piece of tissue obtained from the projecting part of the tumor.

If the tumor is papillary and can be freely raised, pulling up the surrounding normal mucous membrane with it, it is an indication that there is no involvement of the bladder muscle below the mucous membrane; the prognosis is good even if the tumor is grade 3. If the tumor is fixed and cannot be raised from the bladder, this means that the tumor has invaded the bladder muscle and is beginning to infiltrate; therefore it has a graver prognosis than the movable tumor.

If the tumor base is indurated to touch and to any needles which may be thrust into it for radon implantation, then such a tumor is unquestionably infiltrating whether or not it is papillary in appearance.

METHODS OF PATHOLOGIC GRADING

The information sought from the pathologic examination of a tumor is first, the tumor's potential malignancy—the likelihood of invasion of the bladder muscle and lymphatics and therefore the possibilities of its metastasizing, and second, the exact status of the tumor as regards invasion of the muscle wall of the bladder.

Obviously grades of cancer foretell in a vague way the probable outcome of any form of treatment but give no clue to the exact situation at any given time. There must be a period in its growth before a grade 4 tumor has invaded the muscle and lymphatics of the bladder. The same is true as regards metastasis.

If tumors are classified as papillary and infiltrating it is known that the latter type is potentially more malignant than the former, just as a grade 4 cancer is more deadly than a grade 1. This simply leaves two classes to deal with instead of four. It is also known that the infiltrating tumor has already invaded the bladder wall, but there is no hint from the pathologic examination whether the papillary tumor has invaded the bladder wall. Moreover, there is no hint whether the given tumor has metastasized.

By use of the four grade method of classifying cancers different clinics can more easily compare end results than if the two grade method is used. But even this has its limitations. I know of no two pathologists who use the same criteria for grading. Without the whole tumor for examination, as those who depend on radon therapy must be, a more accurate estimate of the actual degree of invasion of the bladder muscle by the tumor is probably obtained from the clinical than from the pathologic examination. As to metastasis, if roentgenograms reveal nothing one simply has to guess. It is obvious that all urologists should use all methods available to make the complete diagnosis, and even then there will be limitations to the exact knowledge with regard to any given tumor. I believe that a specimen obtained from the projecting part of a tumor nearly always reveals less malignant growth than does a specimen taken from the tumor base. This has repeatedly been demonstrated by examinations of entire tumors removed in toto.

In my opinion there is no excuse for digging deep into the tumor base for a pathologic specimen. The bladder wall is thin, and if radon seeds are implanted in such an area there is grave danger of a subsequent rupture of the bladder. In all my experience I have heard of only 2 instances of vesical rupture following radon implantation.

All of the foregoing is not in the least intended to be an alibi for any method which has been used in the determination of five year results. It means that the clinical examination should be used in conjunction with the pathologic examination to give the true diagnosis.

FIVE YEAR RESULTS

Up to five years ago I had treated 298 patients with vesical cancers with radium, and it is these cases on which this paper is based. There has been no selection of cases, but all cases were included in which the tumor

1. Beer, E.: Some Remarks on Five Year Cures in Malignant Tumors, Surg., Gynec. & Obst. **60**: 479-480 (Feb., no. 2A) 1935.
2. Hunt, V. C.: Consideration of Surgical Procedures in Treatment of Malignant Disease of Urinary Bladder, Am. J. Surg. **10**: 69-73 (Oct.) 1930.

was believed to be confined to the bladder. Admittedly too many extensive infiltrating tumors were treated in an attempt to cure. The reason for this was that the work was to a large degree experimental. An attempt was made to determine the possibilities and the limitations of radon seed implantation.

Of these 298 cases there were 43 which had unsatisfactory pathologic reports or none at all, and these cases are excluded, to leave 255 cases. Of these 255 cases there were 248 pathologically diagnosed as carcinoma and 7 in which the diagnosis was atypical papilloma. These are classed under papillary carcinoma.

Because of the confused status of the classification of cancer of the bladder and in order to consider the five year cures from all angles I have tabulated the

A. *Five Year Results in Two Hundred and Fifty-Five Cases of Cancer of the Bladder Diagnosed Pathologically (Including Seven Cases of Atypical Papilloma)*

Determinate Cases		Indeterminate Cases: Cancer-Free but Dead or Lost Track of Before Five Years
Well Five Years	Dead of Cancer	
79 (35.7%)	142	34

Of 94 cases of papillary cancer, including 7 cases of atypical papilloma, there were 49, or 52 per cent, five year cures. Of 127 cases of infiltrating cancer there were 30, or 23.6 per cent, five year cures.

B. *Five Year Cures in One Hundred and Thirteen Cases Graded 1, 2, 3 or 4*

Determinate Cases				
Well Five Years				
Cases				Indeterminate Cases: Cancer-Free but Dead or Lost Track of Before Five Years
Grade	No.	%	Dead of Cancer	
1	6	55	5	5
2	11	32	23	6
3 and 4	6	11	46	5

In computing the five year cures the cases have been put in two groups, determinate and indeterminate. The former comprise those in which the patients are well five years or are dead of cancer, and the percentage of curves is computed by comparing these two. The indeterminate cases are those in which the patients have been proved free of cancer but have either died before the five year period or have been lost track of. These cases are thrown out of the five year computations. It should be noted, however, that in the 34 indeterminate cases (part *A*) the bladder has been proved cancer-free.

results from two different points of view. These are shown in accompanying table.

The number of tumors of grades 1, 2, 3 and 4 are too small to give an accurate picture of the five year end results.

The first patient of my series whose tumor was diagnosed according to grade of malignancy was admitted to the Memorial Hospital in March 1924. Since then 113 cases have been graded. These are reported. But during that time for one reason or another, usually because the specimen was too small for grading, 82 have not been classified.

Percentages of five year cures vary with the years. One or two years in which many large infiltrating tumors are encountered may reduce the percentage decidedly. Several years ago I reported 40 per cent five year cures. As of today that has dropped 4 per cent to 35.7 per cent.

LONG PERIODS OF CURE

One patient with papillary cancer has remained well for a quarter of a century. Three with papillary cancers and 1 with infiltrating cancer have survived over twenty years. One with papillary cancer and 2 with infiltrating cancers have lived over fifteen years. Eleven with papillary and 5 with infiltrating cancers have remained well over ten years. Thirteen with papillary and 5 with infiltrating cancers have survived over eight years.

Two case histories of patients who died of cancer are of interest.

REPORT OF CASES

Case 1.—S. L. came to the Memorial Hospital in May 1936. Cystoscopic examination revealed a low papillary growth 3 by 2 cm. back of the right ureter. The pathologic examination showed one clump of hyperchromatic cells, probably carcinomatous. This tumor was implanted through the cystoscope with radon seeds. Both in 1937 and 1939 cystoscopic study disclosed no tumor in the bladder. In March 1943 cystoscopic examination showed multiple low papillary growth in the bladder vault. By partial cystectomy the tumor-bearing area, 7 by 5 cm., was removed. The pathologic examination disclosed ulcerative cystitis with glandlike pits lined by atypical cancer cells. In June 1944 cystoscopic study revealed papillary growths in the bladder incision. These proved to be grade 3 carcinoma. They were implanted with radon seeds. In March 1944, because of the probability that the bladder was still carcinomatous and because of bilateral hydroureter, a bilateral skin ureterostomy was performed and subsequent to this cystectomy and prostatectomy. The pathologic examination showed extensive radium changes in the bladder with ulcerative cystitis, but no cancer within the bladder. However, there was extensive epidermoid carcinomatous invasion of the prostate and within the lymphatic vessels of the prostate. The patient died in February 1946 following an operation for inguinal metastasis, nearly ten years after he was first seen. If cystectomy and prostatectomy had been performed at that time he probably would have been cured. But this case was the great exception. No one could have guessed that this was a tumor-bearing bladder. Time and again tumors which looked worse than this one have been permanently cured by radium therapy.

Case 2.—J. M. was first seen at the Memorial Hospital in May 1941. At operative intervention there was a flat hard ulcerating tumor of the trigone 4 cm. in its greatest diameter. Nineteen radon seeds totaling 25.65 millicuries were implanted in it. The pathologic examination showed epidermoid carcinoma of not sufficient quantity to grade. In November 1941 and May 1942 the bladder was absolutely normal. In October 1942 he complained of sciatica on the right side; the persistence of this indicated the presence of metastasis, which was impotently treated by roentgen therapy. The patient died in May 1943 of his cancer. This is, I believe, the only case I have ever seen in which an infiltrating vesical tumor has entirely healed after radon implantation and remained well up to the time of the patient's death two years later.

SUMMARY

The history of the first case at Memorial Hospital in which a cancer of the bladder was controlled by radium is given.

It is difficult to accurately diagnose vesical tumors from small specimens taken from the surface of the growth.

When only a part of the tumor is obtained the pathologic diagnosis must be modified by the clinical observations to give the true diagnosis.

In 255 cases of cancer of the bladder diagnosed by pathologic examination there were 35.7 per cent five year cures.

In 113 cases in which tumors have been graded there were in grade 1, 55 per cent five year cures; in grade 2, 32 per cent, and in grades 3 and 4 combined, only 11 per cent.

In tumors graded according to the pathologic examination modified by the clinical estimate there were 52 per cent five year cures in papillary cancers and 23 per cent five year cures in infiltrating cancers.

114 East Fifty-Fourth Street.

TOTAL CYSTECTOMY FOR CARCINOMA OF THE BLADDER

CHARLES C. HIGGINS, M.D.
Cleveland

The treatment of carcinoma of the bladder is a controversial subject, and there are varied opinions as to the treatment of choice, especially for extensive involvement of the bladder by a malignant neoplasm. In considering the radical treatment of carcinoma of the bladder several problems arise for evaluation.

With regard to diversion of the urinary stream, the introduction of intravenous urography has made it possible to ascertain the status of the kidneys and ureters several years after transplantation of the ureters into the rectosigmoid. In such instances the urograms may reveal normal or fairly normal upper urinary tracts. It is also true in other cases that varying degrees of hydroureters and hydronephrosis are present. It is apparent that with refinements in operative technic this complication is being less frequently observed. Experience has demonstrated that the bowel functions excellently as a reservoir for urine without distress to the patient. Frequent excursions to the toilet day and night do not occur, and the person may lead a normal life.

Three other surgical procedures are available: nephrostomy, pyelostomy and cutaneous ureterostomy. The urinary drainage subsequent to the first two procedures is difficult to manage. If transplantation in the bowel is not performed the ureterocutaneous procedure is preferable, the ureter being brought to the skin at a sufficient distance from the anterosuperior spine so that a special receptacle may be worn.

Other factors to be considered in the decision whether to perform total cystectomy are: early diagnosis, the results which might be secured by less radical types of treatment, the site of the lesion, whether one or both of the ureteral orifices are involved by the growth, gradation of the tumor, presence or absence of serious renal disease and, finally, the age and general condition of the patient.

A review of the literature reveals that no standard method of treatment has been adopted, and various factors influence the treatment to be instituted. In 1934 the carcinoma registry presented a collected review of 902 tumors treated by urologists throughout the United States.[1] The positions of the tumors in 854 cases follow: trigone, 32.2 per cent; lateral walls, 35.3 per cent; posterior wall, 10.2 per cent; bladder neck, 9.0 per cent; vault, 7.5 per cent, and anterior wall, 5.7 per cent. Of 854 cases, one area of the bladder was involved in 473. In this group the positions of the tumors were: trigone, 27.37 per cent; bladder neck, 5.89 per cent; lateral walls, 41.89 per cent; posterior wall, 10.92 per cent; anterior wall, 6.32 per cent, and vault, 7.58 per cent.

These statistics from a large series are of inestimable value in deciding on the treatment to be instituted. Although a fairly large number of tumors occur on the lateral walls, if they occupy a low position the ureteral orifice may be involved. In my series when the tumors of the trigone and the bladder neck with extension into the urethra are included, complete excision of the tumor without injury to the ureters or the vesical sphincter, which may result in incontinence, was impossible in 72.5 per cent. If the tumor occupies a low position on the lateral wall it may be removed by segmental resection of the bladder with reimplantation of the ureter into another portion.

In only 27.5 per cent of my series, and this figure agrees closely with that of the carcinoma registry (23.4 per cent), was complete excision possible without reimplantation of the ureter into another part of the bladder or without injury to the bladder neck. Of course, many of the tumors are amenable to transurethral resection without or with implantation of radium seeds. This is especially true in the papillary tumor with a small pedicle. It has been emphasized that the end results are influenced by the gradation of the tumor. This also may influence one's opinion as to whether a total cystectomy should be performed.

The reports of the carcinoma registry are as follows: Of 902 cases reviewed 436 were papillary carcinoma and 446 were infiltrating carcinoma. The end results in 658 cases of epithelial tumor are given in table 1. These figures imply that the patient has remained alive for a period of five years after treatment but do not exclude patients with recurrence who may not survive six years or more. The question arises whether in many cases complete cystectomy should be performed earlier in the course of the disease. By more radical procedures cannot more than 45.9 per cent survivals be anticipated for malignant neoplasms of the lowest grade which occur in the bladder? Will not more than 35.8 per cent of patients with grade 1 and 2 tumors be living and well more than five years if total cystectomy is performed? Cannot more than 4.3 per cent of patients with grade 4 tumors be cured for five years by complete extirpation of the bladder?

TABLE 1.—*End Results in Epithelial Tumor*

Number of Cases	Grade of Cancer	% Alive 5 Years
133	1	45.9
194	2	25.7
244	3	13.9
70	4	4.3

It is true that these statistics include data on both papillary and infiltrating tumors. Of 151 patients living for five years, 109 had papillary carcinoma of the bladder, 34 had infiltrating carcinoma and 8 had tumors which were not classified. In a group of 312 patients who were operated on for papillary tumors of the bladder 34.9 per cent survived five years. It is also stated that only 13.9 per cent of patients with infiltrating carcinoma of the bladder were considered cured. The question arises as to whether these results are the best that can be secured by modern surgical procedures. Can the end results be improved by cystectomy? Obviously the data on a similar series treated by cystectomy and followed for a period of five to ten years will be the deciding factor. The size of the tumor may also influence the decision to advocate cystectomy.

The carcinoma registry has stated that the cancer of 30.3 per cent of the patients with tumors greater than 2 cm. in diameter was controlled for five years, but if the tumor was larger than 5 cm. only 15.8 per cent of the patients were alive at the end of five years. To summarize the reports of the carcinoma registry, of 658 patients given surgical treatment 151 survived

From the Cleveland Clinic.

Read before the Section on Urology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

1. Cancer of the Bladder: A Study Based on Nine Hundred and Two Epithelial Tumors of the Bladder in the Carcinoma Registry of the American Urological Association, J. Urol. **31**: 423-472, 1934.

for five years. Of this group 104 (15.9 per cent) were reported without evidence of cancer.

In a series of 300 cases from the New York Hospital and Memorial Hospital 291 were reviewed (table 2).[1a] To summarize the results, (1) 10 per cent of untreated patients may survive five years; (2) 17.3 per cent survived five years, and (3) 6 per cent treated by radiation were cured for five years.

These statistics and those of the carcinoma registry give the end results of procedures other than total cystectomy. This offers a basis on which to evaluate the role of total cystectomy in the treatment of malignant neoplasms of the bladder The incidence of metastasis is still subject to question. Of 902 cases studied by the carcinoma registry metastases were present in 72 cases.

Spooner[2] in 1934 reviewed postmortem data in 163 cases of carcinoma of the bladder and found that metastasis occurred in 29, or 29 per cent. Cunningham[3] collected 411 protocols of malignant tumors of the bladder, observing that 32.36 per cent involved metastasis. Caulk[4] reported 25 per cent, Beer[5] 10 per cent and Higgins[6] 12 per cent. Thus, metastasis from the tumor of the bladder is not the cause of death in the majority of cases.

Caulk in 1935 in a review of 144 cases of carcinoma of the bladder found that 44 per cent manifested

TABLE 2.—*End Results in Cancer Series from the New York and Memorial Hospitals*

A.	232, or 79.7 per cent, dead in five years
B.	21 with disease (lost trace of)
C.	11 living five years with disease
D.	27, or 9.2 per cent, living five years
1.	5 died after five years
2.	3 living and well (cystectomy)
3.	3 diagnoses questionable
E.	6 per cent cured by radiation

a definite diminution in renal function. Twenty-one per cent of three hundred cases involved renal infection. There were 90 deaths, and of this group 38 per cent demonstrated disease of the upper part of the urinary tract. In 25 of the 90 cases autopsies were performed, and the author[4] concluded that 60 per cent of the deaths resulted from renal involvement.

Spooner in his postmortem investigation of 163 cases of carcinoma of the bladder observed metastasis in 29 per cent. He states, ". . . of the patients who had metastatic lesions 65 per cent were regarded as amenable to surgical treatment: many of these had a chance of surgical cure as far as clinical judgment could determine."

Cystectomy and transplantation of the ureters into the rectosigmoid are now recommended under the following conditions:

Indications for Operation

1. Abdominal exploration reveals no distant metastasis. Unless the iliac nodes are too extensively involved they may be removed by block dissection.

2. The carcinoma is located on the floor of the bladder and the ureteral orifices are encroached on or the outlet of the bladder is so involved that if the cancer were to be locally treated by any method, destructive action on the ureteral orifices, loss of vesical function and incontinence would result.

3. More extensive single or multiple infiltrating tumors are present.

4. Multiple recurring tumors develop rapidly and cannot be controlled by fulguration so that they eventually fill the bladder.

5. High grade malignant neoplasms are confined to the bladder.

6. It is obvious that renal function is adequate and distant or extensive local extension of the disease is absent.

Preoperative Care

1. (*a*) Soft preoperative nonresidue diet (two days) and (*b*) liquid nonresidue diet (two days).

2. Additional vitamins.

3. Sulfasuxidine 0.25 Gm. per kilogram of body weight every four hours.

4. Magnesium sulfate 1 ounce (30 cc.) in 8 ounces (250 cc.) of water. The solution is divided into eight equal parts and given every fifteen minutes until all eight parts are administered every morning.

5. Saline enema every evening.

Prior to Operation

1. Only dextrose water 10 per cent by mouth on day prior to operation.

2. Enemas until clear in the evening.

3. Tincture of opium minims 10 to 15 (0.6 to 0.9 cc.) following enemas and repeated once during the night.

4. Mushroom catheter size 28 or 30 inserted into rectum two hours before operation to drain off any fluid in the rectum.

5. Phenobarbital 2 grains (0.13 Gm.) at bedtime.

6. Morphine sulfate ⅙ grain (10 mg.); atropine sulfate 1/150 grain (0.4 mg.) given one hour before operation.

Postoperative Care

First Day:

1. Flat in bed for six hours, then 25 degrees elevation of the headrest.

2. Nothing by mouth except tincture of opium, minims 10 to 15 (0.6 to 0.9 cc.), three times a day (moisten lips with liquid petrolatum).

3. Intravenous fluids, 3,000 cc.

4. Blood transfusion if advisable.

5. Rectal tube output charted.

6. Blood urea determination.

Second Day:

1. Intravenous fluids, 3,000 cc.

2. No fluid by mouth (moisten lips).

3. Blood urea, carbon dioxide and chloride determinations.

4. Ice bag; sponge extremities for temperature over 101 F.

Third Day:

1. Fifty per cent dextrose water, ½ ounce (15 cc.) every hour.

2. Continue 3,000 cc. intravenous fluids.

3. Discontinue tincture of opium.

4. Resume preoperative vitamin therapy.

Fourth Day: Water by mouth as desired.

Fifth Day: Clear liquid or liquid nonresidue diet.

Seventh Through Twelfth Days:

1. Rectal tube removed.

2. Soft diet.

3. Patient out of bed.

4. Blood urea, carbon dioxide and chloride determinations as indicated.

OPERATIVE RESULTS

In the past cystectomy and transplantation of the ureters into the bowel have been condemned primarily for two reasons: first, excessive operative mortality, and second, unsatisfactory end results.

1a. Marshall, V. F.: Comparison of Radiation and Surgery for Cancer of the Bladder, J. A. M. A. **134**: 501-507 (June 7) 1947.

2. Spooner, A. D.: Metastasis in Epithelioma of Urinary Bladder, Tr. Am. A. Genito-Urin. Surgeons. **27**: 81-89, 1934.

3. Cunningham, cited by Spooner.[2]

4. Caulk, J. R.: Upper Urinary Tract in Carcinoma of Bladder, Ann. Surg. **101**: 1432-1440, 1935.

5. Beer, E.: Surgery of Bladder Tumors, Ann. Surg. **101**: 1412-1415, 1935.

6. Higgins, C. C.: Cystectomy and Transplantation of Ureters into Bowel for Carcinoma of Bladder, Surg., Gynec. & Obst. **66**: 549-556, 1938.

With adequate preoperative and postoperative care, refinements in anesthesia and operative technic, the mortality following operation is definitely lower than in past years. The mortality following cystectomy is comparable to that for extensive operations for malignant lesions of the abdominal viscera.

In many instances the poor end results may be attributed to selection of cases; abdominal exploration for metastases should be a routine procedure. Likewise the operation was formerly confined to the group of patients who had failed to respond to all other types of treatment and was utilized as an event of last resort. In many of these cases glandular involvement and distant metastases were present, and satisfactory late results could not be expected. Total cystectomy may be performed in one, two or three stages. At the present time I prefer to transplant the right ureter into the rectosigmoid and ten to twelve days later transplant the left ureter and extirpate the bladder. In a younger person with satisfactory renal function the one stage operation may be performed. If a bilateral cutaneous ureterostomy is advisable, a one stage procedure may be carried out.

The cystectomy technic also varies; if the lesion involves the bladder neck the perineal abdominal procedure is preferable. However, when the lesion is relatively far from the bladder neck the abdominal excision suffices. That the procedure may be accompanied by a low mortality rate is evident from the last 22 cases, in which there were no operative deaths. Certainly with the present experience a mortality of 5 per cent or less may be anticipated.

Insufficient time has elapsed to justify definite conclusions as to the end results to be anticipated following total cystectomy for carcinoma of the bladder. A large series must be followed for five to ten years to define the end results clearly. At the present time cystectomy and transplantation of the ureters into the rectosigmoid may be performed with a reasonable operative risk to the patient. Delay in advising cystectomy, while the tumor enlarges, the patient becomes weaker and metastases occur, will undoubtedly be followed by unsatisfactory end results. How early should cystectomy be advised for carcinoma of the bladder? In the future lies the answer to this question.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BARRINGER AND HIGGINS

DR. THOMAS D. MOORE, Memphis, Tenn.: Dr. Barringer's long experience and sound ideas are reflected in the fact that of 217 cases, including all grades of malignancy, 75, or 34 per cent, were controlled five years or longer. It would be of interest to know what percentage of patients in Dr. Barringer's series have received surgical or other types of treatment, exclusive of radon. He advocates excision of lesions involving the vault of the bladder, in preference to irradiation. In my files I found the records of 157 carcinomas of the bladder; either radon or radium element, or both, was employed in 69 (44 per cent). Radium element in platinum needles was employed in 52; gold radon in 16, and both radon and radium element in 1. In the majority of these cases the implantation of radium element or radon has been combined with electrocoagulation of the lesion or surgical diathermy. Twenty-eight patients were treated by open operation and 41 by closed methods. Dr. Barringer has stated that the transurethral approach in such cases is "a much neglected one and is of value particularly in small postoperative recurrences." To this I would add also that it is desirable in the very aged. The high cost of gold radon renders its use prohibitive in many cases, especially on charity services and among the indigent. Radium element frequently is available in such cases, which prompted me several years ago to devise a more satisfactory method of utilizing radium element in the treatment of vesical carcinoma as a closed procedure. A special forceps was devised, with which the needles are introduced through a direct cystoscope. In any method of treatment the five year controls are of special interest. In this comparatively small group of 69 patients in whom radium element or radon was employed, 31 have been followed five years or longer. Of these, 13, or 41 per cent, have survived more than five years, and 1 patient is still living eighteen years after cystoscopic implantation of 20 gold radons in an ulcerative, infiltrating, inoperable carcinoma involving the right wall of the bladder. Radium element, in 5 mg. units, was employed in 20 cases, 7 (or 35 per cent) of which were controlled five years or longer; radon, in 1.5 millicurie implants, was used in 11 cases, 6 (or 54.5 per cent) of which were controlled five years or longer. Although the number of cases is small these comparative results would indicate that radon is preferable to radium element. It exerts its effect over a longer period before its ultimate decay, whereas radium element in 5 mg. units usually has been left in the bladder only forty-eight to seventy-two hours. More recently a longer period of irradiation has been possible by the employment of 1 mg. radium needles, which have usually been left in the bladder ten days, thus providing 240 mg. hours of irradiation per needle. It is too soon to evaluate the late results in these cases.

DR. LEO EDELMAN, New York: After reviewing Dr. Higgin's paper, the possibility of such a large series of total cystectomies can be readily understood. He apparently bases his indication for cystectomy not so much on the type of tumor as on its size, location and multiplicity. We divide bladder tumors in two groups: The first includes benign papilloma, single or multiple, and papillary carcinoma (noninfiltrating). This group, with few exceptions, have responded favorably to high frequency fulguration supplemented in some instances by radon seed implantation. The second group includes the flat sessile tumors, infiltrating transitional cell carcinoma and the clinical infiltrating papillary carcinoma. Radical surgery is the treatment of choice for this group. Partial resection is done for supratrigonal lesions, resection with reimplantation of the ureter into the bladder when one ureter is compromised, and total cystectomy when the trigone or bladder neck is involved. We have had thirty-four total cystectomies for infiltrating carcinoma during the period from 1931 to 1946. The compromised upper urinary tract warranted only ten ureterosigmoid implantations; the remainder had ureterocutaneous transplants. There were 10 operative deaths (30 per cent operative mortality). Two patients died from circulatory failure or embolism, 2 from progression of the disease and 6 from urosepsis, progressive renal destruction, calculus formation and, in 3 instances, peritonitis. Of the remaining 24 patients, 17 are known to be dead. Ten died within the first year, 5 within the second, 1 at the end of nine and the other at the end of ten years. The cause of death in this group was renal failure, uremia and local or distant metastases in 10 instances, progressive renal destruction, hydroureteronephrosis, stricture and calculous disease in 6. One patient died of heart failure at the age of 70, ten years after operation, with no evidence of tumor at necropsy. Of the surviving 7 patients, 3 were lost to follow-up; 2 are known to have had involvement of lymph nodes at the time of operation. One has been alive three years, is now "suburemic," with one kidney destroyed and the other hydronephrotic and with suspicious symptoms of spinal metastases. Three patients had ureterosigmoid implantations only six months ago. The over-all picture is discouraging, to say the least. Unfortunately most of the patients came to us too late for radical surgery.

DR. BENJAMIN S. BARRINGER, New York: I wish to discuss one point that Dr. Higgins brought up, namely Marshall's "6 per cent cures of cancer of the bladder by radiation" (J. A. M. A. **134**:501 [June 7] 1947). Marshall's results are at variance with much that has gone before. My own five year results with radium have been between 30 and 40 per cent. These results are

based on a comparison between five year cures and the total number of cancers of the bladder in which radium has been used either by the suprapubic or cystoscopic route or both to control the cancer. If the cancer was believed to be confined to the bladder then cure was attempted by radium. Cases in which there were metastases were not knowingly included. No cases were included in which suprapubic cystotomy was done because of pain or bleeding, only with an idea of controlling such pain or bleeding. With few exceptions all five year cures were based on from one to many cystoscopies which revealed a normal bladder. The five year period was dated from the patient's first appearance in the hospital and not from the time cystoscopy showed a normal bladder. Talking with Marshall clarified various data concerning his paper. The source of the "radiation" cases was the Memorial Hospital and included all cases private and clinic seen from 1932 to 1938. Dean and I and various other members of the staff of the Memorial Hospital treated the patients. Marshall treated no patients. Among the patients considered under radiation there were patients treated by radium alone, patients treated by high voltage roentgen therapy alone, patients treated by both, patients treated by fulguration alone and patients entirely untreated. The title of Marshall's paper is not correct. His is not a "comparison of radiation and surgery for cancer of the bladder." The longest postoperative period in his cases of resection has been but fifty-two months. But 3 of his cystectomy patients have gone more than five years. Yet Marshall attempts to compare these results with those of radiation all of which was done before 1939. His radiation cases comprise all cases entering Memorial Hospital between 1932 and 1938. From how many cancers of the bladder did he pick the cases for resection and cystectomy? How can he give the five year results of either operation? His technic of radon seed implantation is erroneous, and neither Dean nor I ever routinely advised roentgen radiation to supplement radon seed implantation. Seventy-one of Marshall's cases of radiation were appropriated from my private cases. Of these, 52 were determinate and 19 indeterminate. That is, the latter patients had become free of cancer but had died before the five year period of some cause other than cancer or had been lost track of. So we have 52 determinate cases, of which 11 were five year survivals (21 per cent) and 1 has gone nine years but is not yet absolutely in the cured column. Three of these controlled cases were of atypical papilloma. Marshall told me he included no cases of atypical papilloma in his series. Yet his paper says, "It is possible that a few papillomas with atypical features may have crept into the group classified as cancer." This group of 71 cases is too small to give a correct picture of five year survivals. I doubt the accuracy of his published results.

DR. CHARLES C. HIGGINS, Cleveland: I do not wish to imply that cystectomy can be utilized in the management of all patients with advanced carcinoma of the bladder. As we have inoperable cancer of the bowel and inoperable carcinoma in other sites of the body, we have lesions in the bladder that are so extensive that a complete cystectomy cannot be performed. The gradation of tumors of the bladder which we use at the clinic is 1, 2, 3 and 4. A similar gradation is used by the Carcinoma Registry of the American Urological Association. What I do object to, and I think perhaps this is illustrated by Dr. Edelman's report, is that cystectomy should be utilized as a court of last resort in the treatment of carcinoma of the bladder. In the series which he presented today it was necessary to perform a large percentage of bilateral cutaneous ureterostomies for diversion of the urinary stream. This immediately implies that the delay has given rise to serious pathologic change in the upper urinary tract, rendering the ureters unsuitable for transplantation into the bowel. My plea is for earlier cystectomy, not permitting the lesion to become inoperable, not having it extend beyond the confines of the bladder, and operating at a time when the calibers of the ureters are such that they may be implanted into the bowel with a relatively low operative mortality. Again may I reiterate that cystectomy obviously is not a cure-all for all malignant lesions of the bladder.

CARDIAC ARREST UNDER ANESTHESIA

EDWIN R. RUZICKA, M.D.
and
MORRIS J. NICHOLSON, M.D.
Boston

The first death attributed to anesthesia occurred on Jan. 28, 1848. This was about fifteen months after the introduction of ether anesthesia to medicine and about two months after Simpson used chloroform in obstetrics.[1] The many commissions and committees appointed to study this and other deaths generally decided that the fatalities were the result of overdosage with the drug, which caused respiratory failure followed by cardiac failure. It was not realized that cardiac failure could occur without drug overdosage and without preliminary respiratory failure. Snow [1] was among the few men who thought that anesthetic agents might have a direct effect on the heart. It was sixty years before the work of Levy with chloroform proved that this was true. One hundred years [1] after the first reported anesthetic death, which may have been caused by cardiac arrest under anesthesia, we are still seriously concerned with this problem. In spite of much progress in the field of anesthesiology there is no adequate means of preventing or treating this serious complication.

Clinically, we have considered sudden cardiac arrest to have occurred when without previous warning the pulse and blood pressure have suddenly disappeared. Respirations may or may not cease simultaneously. Apparently some inefficient cardiac activity which cannot be detected in the peripheral circulation must be present for a brief period after the onset of this complication. During this period the cardiac muscle may be returned to its former effective state of function if the proper form of treatment is instituted.

Unless early diagnosis is made and prompt treatment is instituted, sudden cardiac arrest in the operating room is fatal. A solution of this problem cannot be presented until more is known concerning its cause. Our present limited knowledge, however, should be the basis for a plan of treatment to be applied when this most urgent emergency occurs. It is our purpose to discuss the incidence, possible causal factors, treatment, complications and pathologic changes of sudden cardiac arrest.

INCIDENCE

In the past five years there have been 9 cases of sudden cardiac arrest in our operating rooms. This is approximately 2 cases per year. This concurs with the experience of Bailey [2] and others and leads us to assume that the same incidence of this complication may be expected in any busy operating theater.

DIAGNOSIS

The anesthesiologist is in a position of great responsibility in establishing the diagnosis of sudden cardiac arrest. He is usually the first member of the surgical

From the Department of Anesthesiology, the Lahey Clinic.

Read before the Section on Anesthesiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Beecher, H. K.: First Anesthetic Death with Some Remarks Suggested by It on the Field of the Laboratory and the Clinic in the Appraisal of New Anesthetic Agents, Anesthesiology **2**: 443-449 (July) 1941.

2. Bailey, H.: Cardiac Massage for Impending Death Under Anaesthesia, Brit. M. J. **2**: 84-85 (July 19) 1941.

team to become aware of the onset of the complication unless the heart is under direct vision. The surgeon must be notified immediately when the pulse and blood pressure disappear. Time must not be lost while checking the position of the blood pressure diaphragm and cuff. Experience has demonstrated that a properly applied and previously tested blood pressure cuff is not likely to slip enough so that the blood pressure becomes suddenly inaudible. The anesthesiologist should immediately ask the surgeon to check the pulse by palpating the aorta, the heart or the carotid artery, depending on where he is working. Some false alarms will surely occur, but they must be tolerated to establish the diagnosis and begin the treatment in the brief period allowed.

FACTORS OF POSSIBLE ETIOLOGIC SIGNIFICANCE

Although there is little accurate information on the causation of sudden cardiac arrest, several factors are known which throw some light on the problem. The ability of cyclopropane, chloroform and ethyl chloride to sensitize the heart to epinephrine is well known.[3] It is a basic principle in physiology that hypoxia will sensitize the heart and cause an increased content of epinephrine in the circulating blood.[4] Excitement also causes an outpouring of epinephrine into the circulation.[4] Downs [5] wrote of the effect of hypoxia in producing a hypersensitive carotid sinus reaction with resultant inhibition of cardiac activity. Barbiturates given intravenously and cyclopropane exhibit a parasympathetic effect on the heart.[6] Stimulation of the vagus nerve may cause a powerful inhibitory effect on the heart.[7] It is likely that one or more of the aforementioned factors is present in every instance of sudden cardiac arrest. Undoubtedly, there are other unrecognized factors which play an important part in the causation of this complication. This incomplete conception of etiologic factors, however, enables one to formulate a plan of treatment in cases of sudden cardiac arrest.

TREATMENT

Bailey,[2] Barber and Madden [8] and Beck [9] have pointed out that effective emergency treatment must begin immediately. Weinberger, Gibbon and Gibbon [10] have demonstrated experimentally that treatment must begin within three to five minutes after the cessation of circulation of the blood. These workers demonstrated that interruption of the circulation to the brain for three minutes and twenty seconds or longer resulted in permanent changes in psychic behavior. Interruption for eight minutes and forty-five seconds was incompatible with life for more than a few hours. The importance of this brief time interval is borne out by clinical experience. Therefore, since effective treatment must begin within three to five minutes after cardiac arrest, a definite plan of action must be prepared in advance. The success of this plan depends on the alertness of the anesthesiologist in carrying out his responsibility for prompt diagnosis and the direction of treatment.

Our plan of action is as follows: 1. The anesthesiologist must immediately begin artificial respiration with 100 per cent oxygen. This presupposes that there is a clear airway. 2. The surgeon must begin cardiac massage immediately. This is the all-important step. 3. Drug therapy consists of the use of two drugs: procaine and epinephrine. 4. General methods of treatment include the intravenous administration of fluids and the institution of 5 to 10 degrees of Trendelenburg position.

There is bound to be disagreement with this method of treatment. Therefore, a presentation of our reasons for such a plan is given.

1. Artificial respiration with 100 per cent oxygen must be started immediately. In addition to maintaining as high a concentration of oxygen as possible in the pulmonary alveoli, artificial respiration may be of some benefit in maintaining circulation of the blood.[11] An endotracheal tube should be used to insure a clear airway. The return of cardiac activity does not signal the return of respiratory activity. Artificial respiration may need to be continued from a few minutes to several hours after the reappearance of cardiac activity. When this is necessary some one of the mechanical methods of artificial respiration may be considered.[12] The anesthesiologist, however, should be thoroughly familiar with any method which he uses.

2. It is apparent that artificial respiration is of no value unless the circulation is maintained. When this is not done by the heart itself it must be done by the surgeon. Cardiac massage is the mainstay of the treatment and must be begun immediately if a favorable outcome is to ensue. The approach to the heart depends on the operative procedure being done but resolves into three routes: transperitoneal subdiaphragmatic, transperitoneal transdiaphragmatic and transthoracic.[9] Bailey [13] recommended that cardiac massage be done first by the transperitoneal subdiaphragmatic method. Counterpressure is made by the base of the palm of the left hand on the lower costal margin against intermittent compression of the ventricles by the pulps of fingers of the right hand. When the thorax is deformed or the costal margin is rigid or when there is no response, the method of cardiac massage recommended by Nicholson,[14] of England, should be followed. This is the transperitoneal transdiaphragmatic method. It

3. Robbins, B. H.: Cyclopropane Anesthesia, Baltimore, Williams & Wilkins Company, 1940. Meek, W. J.: Cardiac Effects of Inhalant Anesthetics, in Harvey Lectures, 1940-1941, Baltimore, Williams & Wilkins Company, 1941, vol. 36, pp. 188-227.

4. Best, C. H., and Taylor, N. B.: Physiological Basis of Medical Practice, ed. 4, Baltimore, Williams & Wilkins Company, 1945.

5. Downs, T. M.: The Carotid Sinus as an Etiological Factor in Sudden Anaesthetic Death, Ann. Surg. **99:** 974-984 (June) 1934.

6. Burstein, C. L., and Rovenstine, E. A.: Respiratory Parasympathetic Action of Some Shorter Acting Barbituric Acid Derivatives, J. Pharmacol. & Exper. Therap. **63:** 42-50 (May) 1938. Adriani, J.: Martin, S. J., and Rovenstine, E. A.: Chromodacryorrhea and Parasympathetic Action of Cyclopropane, Proc. Soc. Exper. Biol. & Med. **45:** 758 (March) 1940.

7. Reid, L. C., and Brace, D. E.: Irritation of the Respiratory Tract and Its Reflex Effect upon the Heart, Surg., Gynec. & Obst. **70:** 157-163 (Feb.) 1940. Thompson, S. A.; Birnbaum, G. L., and Shiner, I. S.: Cardiac Resuscitation, J. A. M. A. **119:** 1479-1485 (Aug. 29) 1943.

8. Barber, R. F., and Madden, J. L.: Resuscitation of the Heart, Am. J. Surg. **64:** 151-168 (May) 1944.

9. Beck, C. S.: Resuscitation for Cardiac Standstill and Ventricular Fibrillation Occurring During Operation, Am. J. Surg. **54:** 273-279 (Oct.) 1941.

10. Weinberger, L. M.; Gibbon, M. H., and Gibbon, J. H., Jr.: Temporary Arrest of the Circulation to the Central Nervous System: I. Physiologic Effects, Arch. Neurol. & Psychiat. **43:** 615-634 (April) 1940.

11. Thompson, S. A.; Quimby, E. H., and Smith, B. C.: The Effects of Pulmonary Resuscitative Procedures upon the Circulation as Demonstrated by the Use of Radioactive Sodium, Surg., Gynec. & Obst. **83:** 387-391 (Sept.) 1946.

12. Thompson, S. A., and Birnbaum, G. L.: The Phenomenon of Asphyxia, Resuscitation, Proc. Soc. Exper. Biol. & Med. **4:** 203-204 (Oct.) 1941. Mautz, F. R.: A Mechanical Respirator as an Adjunct to Closed System Anesthesia, ibid. **42:** 190-192 (Oct.) 1939. Crafoord, C.: Pulmonary Ventilation and Anesthesia in Major Chest Surgery, J. Thoracic Surg. **9:** 237-253 (Feb.) 1940. Schwerma, H., and Ivy, A. C.: Safety of Modern Alternating Positive and Negative Pressure Resuscitators, J. A. M. A. **129:** 1256-1261 (Dec. 29) 1945.

13. Bailey, H.: Impending Death Under Anesthesia, Lancet **1:** 5-9 (Jan. 4) 1947.

14. Nicholson, J. C.: Cardiac Massage, Brit. M. J. **1:** 385-386 (March 21) 1942.

is done by making a buttonhole incision behind the xiphisternum between the attachment of the two sides of the diaphragm. The thumb of the right hand is placed in this opening. The heart may then be compressed within its pericardium between the thumb above and the fingers beneath the diaphragm. The buttonhole incision in the diaphragm need not be repaired. It seems somewhat illogical to recommend the employment first of a method which is admittedly less efficient and obviously more tiring to the operator. These two methods are indicated in the presence of an open abdomen.

If a choice of routes is possible, the transthoracic approach is preferred. It may be done quickly through a transverse incision in the left third or fourth interspace, followed by section of the costal cartilage above and below and wide retraction of the ribs. The heart is under direct vision, cardiac massage may be more efficient and less traumatizing and drugs may be applied directly to or into the heart. Warm saline solution should be poured over the heart frequently to prevent dehydration of tissue. Heat also shortens the refractory period and increases the conductivity of cardiac muscle.[9]

It is probably best to begin cardiac massage at the rate of 40 per minute as soon as the pericardium is accessible. After a few minutes the pericardium may be opened.

The effectiveness of cardiac massage was demonstrated by Gunn.[15] A dye injected into the right ventricle of an arrested heart appeared in the lungs and carotid artery after a few compressions of the heart. The recommended rate of 40 per minute should be effective in moving oxygenated blood through the vascular system while artificial respiration is being carried on.

To facilitate the application of cardiac massage, instruments for opening the abdomen and chest should be available for use at all times in the operating room in an especially labeled container.

3. Assessment of the value of drug therapy in treating patients with cardiac arrest is difficult. For the present, at least, drugs must be considered as an aid to cardiac massage.

Procaine and epinephrine are of real value in the treatment of cardiac arrest. These drugs may be used alone or in combination. When the drugs are administered singly, 10 cc. (100 mg.) of 1 per cent procaine hydrochloride is first given by intravenous or intracardiac injection. This is usually followed by the injection into the cavity of the left ventricle of 0.5 cc. of epinephrine 1 to 1,000, and 9.5 cc. of isotonic solution of sodium chloride. It is quicker, easier and apparently just as efficient to combine the two drugs and administer 0.5 cc. of epinephrine and 9.5 cc. of 1 per cent procaine hydrochloride in a single injection by the intravenous or intracardiac route.

When the diagnosis of cardiac arrest is made, it is desirable to institute drug therapy and cardiac massage simultaneously. When cardiac massage must be delayed until the chest or abdomen is opened, however, it is advisable to administer these drugs by the most accessible intravenous avenue on the possibility that they might be carried to the heart in the meantime.

15. Gunn, J. A.: Massage of Heart and Resuscitation, Brit. M. J. 1:9 (Jan. 1) 1921.

Burstein [16] has reported the successful use intravenously of procaine alone in patients who have cardiac arrhythmias during intrathoracic operations. The topical use of procaine has been effective in the treatment of ventricular fibrillation.[17]

Epinephrine is the time-honored favorite drug in the treatment of cardiac arrest. The propensity of epinephrine to cause arrhythmia and possibly ventricular fibrillation in a sensitized heart has been pointed out. Bailey,[2] who has had probably the most extensive personal experience with cardiac arrest, stated that he has never seen epinephrine alone revive a heart which has already stopped but that it will increase the force of contractions in decided enfeeblement of the heart. Epinephrine was used in every one of our cases, and all arrested hearts were revived. Because of this experience we believe the judicious use of epinephrine is indicated in the treatment of cardiac arrest. As more experience is gained with procaine-epinephrine mixtures and procaine alone, however, we may find that early cardiac massage plus procaine will prove as effective as or more effective than epinephrine or the combination of epinephrine and procaine.

The question of subsequent doses of these drugs must be considered. Administration of procaine should be repeated if the heart has not resumed its activity by the time that it is exposed. A dose equal to the first should be injected into the cavity of the left ventricle. Cardiac massage is continued while drug therapy is used. Prominent in the list of etiologic factors producing sudden cardiac arrest were reflexes of the vagus nerves. Atropine, which should be an effective countermeasure against parasympathetic action on the heart, is not included in the plan of treatment because it is thought that procaine, by raising the threshold of cardiac muscle to all nervous stimulation, offers the same protection that atropine would provide against reflexes of the vagus nerves.

Beck, [9] Barber and Madden [8] stated that intracardiac injections of procaine should be made into the right auricle or ventricle in an effort to reduce the possibility of occurrence of ventricular fibrillation. We have not made the same statement, since the heart will probably not be exposed in most cases of cardiac arrest because of the operative procedure being performed.

To facilitate drug therapy, sterile syringes containing the solutions to be used should be in the operating room ready for immediate use.

RESULTS OF THERAPY

The chances of success for any method of treatment are not good when one considers the recorded experience. Bailey [2] reported that of 40 cases of cardiac arrest he was able to revive the heart in 13 and that of this latter number 4 patients survived. Nicholson,[14] of England, had a similar experience in a smaller series. In our series of 9 cases the heart was revived in every instance. There were 3 complete recoveries and 1 apparent recovery but with death of the patient on the second postoperative day from acute cardiac failure.

Although cardiac activity was resumed in the remaining 5 cases, none of the patients regained consciousness.

16. Burstein, C.: Treatment of Acute Arrhythmias During Anesthesia by Intravenous Procaine, Anesthesiology 7:113-121 (March) 1946.

17. Mautz, F. R.: Reduction of Cardiac Irritability by the Epicardial and Systemic Administration of Drugs as a Protection in Cardiac Surgery, Thoracic Surg. 5:612-628 (Aug.) 1936.

COMPLICATIONS

Ventricular fibrillation[9] is reported to be the most frequent complication occurring in cardiac resuscitation. It may have occurred in the last patient in our series. It is, of course, fatal unless quickly corrected. This is first attempted by cardiac massage. If this proves unsuccessful, Beck[9] recommended that 5 cc. of a 2 per cent solution of procaine (100 mg.) be injected into the cavity of the right heart and massage continued. Beck further stated that the topical application of "metycaine hydrochloride" N. N. R., 10 per cent, or procaine, 5 per cent, to the surface of the fibrillating ventricle is also effective. This elevates the threshold of cardiac muscle to incoming stimuli and renders ineffective the minimal stimulus producing the fibrillation.

Another method of treatment of ventricular fibrillation is by electrical countershock, first used clinically by Beck.[9] Two padded silver electrodes, 25 square centimeters in size, are moistened in sterile isotonic solution of sodium chloride and applied to the anterior and posterior surfaces of the heart. An electrical current of 1 to 1.5 amperes through a 60 cycle alternating current is applied for 0.1 to 0.5 seconds. The heart muscle is contracted and brought to a standstill. Then a normal rhythm may be renewed.

Should the first shock fail, manual massage is resumed, procaine is injected as recommended previously and the shock repeated.

If this method also results in failure, 1 cc. of epinephrine, 1 to 1,000, or 5 cc. of calcium chloride, 1 per cent, is injected intramuscularly into the right ventricle to increase its tone and elasticity. The shock is again repeated and, according to Beck, the fibrillation is usually overcome. This may be repeated several times if necessary. Electric countershock therapy would seem in most cases to be clinically impracticable.

PATHOLOGY

The revival of cardiac and respiratory activity does not mean that the eventual recovery of these patients is assured. Death often occurs during the period of one to fifteen days after operation. During this time these patients show every evidence of damage to the brain such as one would expect to follow a period of severe hypoxia of the central nervous system, and they may show signs of being decerebrate. Postmortem examination commonly fails to reveal demonstrable microscopic or macroscopic evidence of damage to the brain. Many times the only gross pathologic changes are the result of rough or forceful cardiac massage. It is not too rare an experience to find a hemopericardium following blind intracardiac injections. This occurred in 1 of our cases.

Recently Hawkins, McLaughlin and Daniel[18] reported the pathologic findings in the brain of a patient who died twenty-six days following cardiac arrest of ten to eleven minutes while in the operating room. They found degeneration of the cerebral and basal ganglions. Microscopically, there was disappearance of most of the pyramidal cells of the cerebral cortex and an increase in astrocytes and microglial proliferation, especially in the occipital cortex. Chromatolysis was evident in the few surviving cells. Destruction of the occipital cortex and superior temporal gyrus was severe. The blood vessels were not abnormal and there was no thrombosis or perivascular hemorrhage.

REPORTS OF CASES

The plan of treatment presented previously is an outgrowth of the following experiences. The treatment recorded in the case reports is not held as ideal in every case.

CASE 1.—The cardiac arrest in the reported case of Adams and Hand[19] occurred in a man, age 20, two hours after the start of cyclopropane-oxygen anesthesia when a suction catheter was introduced into the trachea by way of the endotracheal tube. The patient gave three convulsive coughs, and cardiac and respiratory activity ceased. We will not comment further on this case except to note that it apparently fits in well with those instances of cardiac arrest which can be traced to a vagovagal reflex. This was the first case of this series, and resulted in complete recovery.

CASE 2.—A woman, age 35, was undergoing hysterectomy following dilation and curettage. When a clamp was placed on the uterus, sudden cardiac arrest occurred. This was thirty minutes after induction of spinal anesthesia with 17 mg. of tetracaine hydrochloride and dextrose solution and ten minutes after the intravenous administration of morphine sulfate, ⅙ grain (10 mg.), and scopolamine, 1/150 grain (0.4 mg.). Artificial respiration by manual pressure on the breathing bag was begun immediately, as was transperitoneal subdiaphragmatic cardiac massage. One cubic centimeter of 1 to 1,000 epinephrine solution was also given intracardially. In about five minutes heart action had returned, and respirations returned twenty minutes later. The operation was terminated. After operation, for forty-eight hours the patient had hyperirritable reflexes with a Babinski reflex. Reflexes then became normal, and the patient made an uneventful recovery except for a loss of memory for events of the twenty-four hours preceding the operation.

CASE 3.—A man, age 31, undergoing cholecystectomy, had cardiac arrest thirty minutes after induction of spinal anesthesia with 18 mg. of tetracaine hydrochloride and dextrose solution and twenty minutes after the operation was begun, while the cystic duct was being exposed. An endotracheal tube was introduced and artificial respiration begun. Subdiaphragmatic cardiac massage was done for a few minutes. Then an incision was made in the dome of the diaphragm and transdiaphragmatic cardiac massage was carried on. Cardiac activity reappeared in about fifteen minutes. The operation was completed rapidly.

Seven hours after operation the patient was unconscious, hyperventilating and showing hypertonic rigidity and carpopedal spasm. In two days he exhibited a flaccid paralysis. On the fifth day tracheotomy was done because of the respiratory obstruction which a flaccid epiglottis created. The temperature remained high, a cord bladder developed and the patient died on the fifteenth day.

The abnormalities noted at necropsy were inconclusive. There was slight cerebellar coning owing to pressure and terminal bronchopneumonia. Microscopic sections revealed diffuse slight edema and slight gliosis. The cause of death was not determined pathologically.

CASE 4.—A woman, age 44, undergoing a splanchnicectomy for essential hypertension, had cardiac arrest after a few warning signs, which is unusual. Twenty-five minutes after induction of spinal anesthesia with 20 mg. of tetracaine hydrochloride and dextrose solution, during which time the patient received 0.2 mg. of "pentothal sodium" N. N. R., and fifteen minutes after the operation was begun, the surgeon had exposed the lumbar sympathetic chain, when the patient was noted to be cyanotic around the lips and using her accessory muscles of respiration. Administration of oxygen by manual positive

18. Hawkins, J.; McLaughlin, C. R., and Daniel, P.: Neuronal Damage from Temporary Cardiac Arrest, Lancet **1**: 488-492 (April 6) 1946.

19. Adams, H. D., and Hand, L. V.: Twenty Minute Cardiac Arrest with Complete Recovery, J. A. M. A. **118**: 133-135 (Jan. 10) 1943.

pressure was of no help, and cardiac and respiratory arrest occurred suddenly.

The patient was placed on her back and intubated; artificial respiration was begun and epinephrine, 0.5 cc., was injected intracardially. In three minutes heart sounds were heard, but no pulse or blood pressure was elicited for another thirty minutes. The operation was immediately terminated. Although the patient looked well oxygenated and showed no unusual signs, she never regained consciousness and died on the third postoperative day.

Postmortem examination did not reveal damage to the brain grossly or microscopically. Pulmonary atelectasis, hydrothorax on the left side, pulmonary congestion and edema, laceration of a coronary vein with hemopericardium of 300 cc., myocardial hypertrophy and dilatation were present. The immediate cause of death was anoxemia according to the report of the pathologist. It is likely that this patient had a complete or total spinal anesthesia preceding the anoxemia.

CASE 5.—A man, age 47, was undergoing avulsion of a sensory root for trigeminal neuralgia when he suddenly took two deep breaths, and then cardiac and respiratory activity ceased. This occurred while the fibers of the second and third divisions of the trigeminal nerve were being divided. The supervising anesthesiologist felt that the two deep inspirations may have been a sign of fourth stage ether anesthesia. The patient was placed supine and artificial respiration begun. About twelve minutes later an incision in the upper part of the abdomen was made and subdiaphragmatic-cardiac massage begun. Epinephrine, 0.75 cc. intramuscularly, produced no change. Epinephrine, 0.5 cc., was injected into the heart while massage was continued. On piercing the heart muscle with the needle a few spontaneous movements were felt. Cardiac activity was resumed after an arrest of about twenty minutes. The operation was terminated.

In one hour the patient reacted to painful stimulation and groaned. He exhibited hypertonicity of all extremities and, at times, a coarse tremor. Bilateral pneumothorax developed, and 1,300 cc. of air was removed from the left side of the chest. He never regained consciousness and died on the seventh postoperative day.

Postmortem examination did not reveal gross or microscopic damage to the brain. There was confluent bronchopneumonia, which was called the immediate cause of death.

CASE 6.—A man, age 65, was undergoing a thyroidectomy when cardiac arrest occurred while the anterior edge of the sternomastoid muscle was being freed. This was twenty minutes after induction of anesthesia with ethylene-oxygen and subsequent anesthesia with ether-oxygen and five minutes after the operation was begun.

Artificial respiration was immediately begun, and 1 cc. of 1 to 1,000 solution of epinephrine was given intravenously. In ten minutes cardiac and respiratory activity appeared as before operation. The operation was then completed. The postoperative course was normal on the first day. On the second postoperative day the patient conversed with a visiting physician and then suddenly died. He was a known cardiac cripple who had long had treatment for cardiac decompensation and hyperthyroidism previous to operation. The episode in the operating room may have been the evidence of a hypersensitive carotid sinus.

Postmortem examination of the brain did not reveal damage grossly or microscopically. There were cardiac dilatation, mitral stenosis and arteriosclerosis. Cardiac failure was called the immediate cause of death.

CASE 7.—A man, age 30, was undergoing a gastric resection. Cardiac arrest occurred suddenly when the right gastric artery was clamped. This was thirty minutes after induction of spinal anesthesia with 18 mg. of tetracaine hydrochloride and dextrose solution and 0.4 Gm. of "sodium pentothal" N. N. R. Morphine sulfate ⅙ grain (10 mg.) was given intravenously about thirty minutes before the cardiac arrest.

Subdiaphragmatic cardiac massage was begun, and 2 cc. of epinephrine, 1 to 1,000, was injected into the heart. A tube was placed in the trachea and artificial respiration begun. In about ten minutes the pulse became palpable at a rapid rate, and twenty minutes later respirations returned.

Postoperatively, the patient had convulsions and tonic contractions of the extremities lasting four minutes at a time. On the second day he became flaccid and had no more convulsions. The temperature remained very high and the patient died on the third day. Permission for autopsy could not be obtained.

CASE 8.—A man, age 49, was admitted to the hospital for biopsy of a suspected carcinoma of the vocal cord. He was short, obese and had a history of drinking 1 quart (0.95 liter) of alcohol daily for several years. Laboratory study revealed a blood picture characteristic of pernicious anemia with a hemoglobin level of 7.3 Gm. and an erythrocyte count of 2,500,000. Urinalysis demonstrated an occasional leukocyte and occasional granular and hyaline casts.

"Pentothal" and curare were selected for use. The mouth and pharynx were sprayed with cocaine, 10 per cent. In the fifteen minutes preceding the suspension laryngoscopy, 60 units of "intocostrin" N. N. R. was given followed after a five minute interval by 0.5 Gm. of "pentothal" in a ten minute period. When the suspension laryngoscopy was begun, the patient objected to the procedure. During the next fifteen minutes an additional 20 units of "intocostrin" and 0.6 Gm. of "pentothal" were given. During this period two brief episodes of laryngospasm occurred. The anesthesiologist was palpating the pulse at the wrist when it suddenly disappeared. Respirations ceased also. The surgeon had a long biopsy forceps in his hand and was looking directly at the cords when this occurred. He immediately used the forceps to hold the cords open while artificial respiration was carried on. When this produced no results in about three minutes, a flexible metal endotracheal tube was inserted and artificial respiration was carried on by pressure on the breathing bag of an anesthetic machine, using the closed system. Nikethamide, 15 cc., was given with no effect. Ten minutes after the cardiac arrest 1 cc. of epinephrine, 1 to 1,000, was infiltrated into the heart by means of a long needle. This dose was repeated in five and in eight minutes. No effect could be noted. Artificial respiration was continued although livor mortis began to appear on the arms, legs and back. Suddenly the pulse reappeared, approximately twenty-five to thirty minutes after it had disappeared. It was strong, with a rate of approximately 130 to 140 per minute. The livor mortis disappeared rapidly. In ten minutes the pulse rate dropped to 60 per minute and remained there for about five minutes. The rate varied between 100 and 120 per minute from then on. Respiratory efforts did not reappear until two hours after the cardiac arrest and one hour and thirty minutes after the return of cardiac activity. In three hours, respirations were regular at 10 to 12 times per minute, but were of a gasping character. The patient did not regain consciousness. His temperature rose rapidly to a high level and he died eleven hours after the cardiac arrest. Permission for autopsy could not be obtained.

This case was thought to be significant for several reasons. It was believed that some cardiac activity must have been present at all times even though the pulse and blood pressure were not obtainable. Epinephrine was the only drug used to stimulate the heart and apparently was of some value. Finally, a cause for the whole episode could be found. Apparently, a wrong choice of anesthetic agent was made. Under "pentothal" anesthesia, the spleen may dilate and retain some of the circulating red blood cells within itself. Curare may also cause impaired venous return to the heart and a lowered cardiac output because of a widespread muscle relaxation or a direct relaxing effect on the smooth muscle of the arterioles. The clinical cardiac arrest in this case could then be said to have a probable beginning in hypoxia of the cardiac musculature caused by the reduction in oxygen-carrying red blood cells

brought about by the action of "pentothal" and curare which resulted in disturbed or inefficient cardiac action.

CASE 9.—A man, age 58, had withstood a pneumonectomy for carcinoma of the left lung with involvement of the pericardium, with no unusual difficulty, when cardiac arrest occurred as the subcutaneous layers of the chest wall were being closed. Artificial respiration was begun, the chest was immediately reopened and the heart was found to be still. Cardiac massage was begun and feeble cardiac activity quickly returned. No pulse or blood pressure, however, could be detected by the anesthesiologist. With the heart under direct vision, the surgeon noted that its activity was becoming more feeble. A mixture of 0.25 cc. of epinephrine and 3 cc. of procaine hydrochloride, 1 per cent, was injected into the right ventricle. The heart beat became more forceful and soon after very rapid and irregular. In order to prevent fibrillation, 4 cc. of procaine hydrochloride, 1 per cent, was injected into the cavity of the left ventricle. Immediately following the injection of procaine there was noticeable slowing of the pulse. The blood pressure was then 120 mm. systolic and 70 mm. diastolic and the pulse rate was 120. The chest was closed without further incident. Convalescence was not unusual. The patient had a loss of memory of events beginning twenty-four hours before operation and was understandingly hazy on the first few postoperative days.

This patient demonstrated that cardiac activity can be present with no detectable pulse or blood pressure.

CONCLUSIONS

This series is not large enough to permit conclusions, but certain observations may be made.

Apparently, we may expect about 2 cases of cardiac arrest each year. Cardiac arrest is likely to occur without warning during any type of operative procedure. It usually occurs during the first thirty minutes of general surgical procedures. In the 2 cases in which thoracic surgical procedures were being performed, cardiac arrest occurred near the completion of the operation.

Effective therapy must begin within three to five minutes. This time limit necessitates a preconceived plan of action which should be practiced. Artificial respiration, cardiac massage and the use of procaine hydrochloride and epinephrine are of value in treating patients with cardiac arrest.

Ventricular fibrillation is probably the most serious complication of returning cardiac activity. It is usually fatal unless immediately treated. The operation should be terminated even though pulse, blood pressure and respiration may return to normal levels.

In the presence of clinical signs of severe damage to the brain, abnormalities in the brain usually are not discovered at necropsy. Those patients who recover have a constant loss of memory for events twenty-four hours previous to operation.

Two of these patients had cardiac arrest shortly after the intravenous administration of morphine sulfate and the subsequent use of "pentothal sodium" anesthesia. It is doubtful that this is of any significance.

The repeated incidence of normal survival appears to be 10 per cent or less in cases of cardiac arrest. We believe that prompt diagnosis and immediate treatment according to a preconceived plan of action will greatly improve the chances for a normal survival. Our normal survival rate is approximately 33.33 per cent.

ABSTRACT OF DISCUSSION

DR. JOHN B. FLICK, Philadelphia: In 1887 Dr. B. A. Watson reported before the American Surgical Association the results of "An Experimental Study of the Effects of Puncture of the Heart in Cases of Chloroform Narcosis." This is of historical interest in connection with the present discussion. He carried out sixty experiments on dogs using chloroform narcosis. Forty of the animals were suffering from complicating traumatic injuries, while 20 were perfectly healthy. Dr. Watson reached the following conclusions: "Puncture of the heart, especially the right ventricle, stimulates muscular contractions and may be advantageously employed in the treatment of this morbid condition. The best results are obtained when abstraction of the blood from the cavity of the ventricle is combined with the stimulating effects produced by the entrance of the aspirator needle. Puncture of the right ventricle is a safer and more efficient operative procedure than puncture of the right auricle." Clinically, unless the chest is open, it would seem difficult to ascertain whether it is the heart or the respiration which ceases first. In most cases there is little time between the cessation of one and of the other. In thoracic operations the opportunity to observe changes at once and to act without delay is a great advantage. At best, the results of treatment of cardiac arrest under anesthesia are discouraging. The plan outlined by Dr. Ruzicka and Dr. Nicholson furnishes a logical working basis for treating cardiac arrest under anesthesia. Prompt recognition of the condition and a preconceived plan of action with the necessary materials at hand, as has been stressed by these authors, are essentials for its success. Those who assume the responsibility for anesthesia should have an adequate basic knowledge of pharmacology and of physiology in addition to a training in the technic of administering anesthetic agents, if catastrophes are to be avoided. This can mean only one thing, that we must develop more physicians in this specialty.

DR. RALPH M. TOVELL, Hartford, Conn.: Investigations have shown that cyclopropane sensitizes the automatic tissues of the heart to sympathomimetic drugs; a dose of epinephrine too small to produce ventricular tachycardia in an unanesthetized dog will do so in the same animal under cyclopropane anesthesia. A nervous and apprehensive patient can produce enough of his own epinephrine during a cyclopropane induction to initiate fatal fibrillation. Procaine and related drugs protect the heart against arrhythmias initiated by injection of epinephrine during cyclopropane anesthesia. Administration of procaine will frequently arrest an already developed ventricular tachycardia and often restores a fibrillating heart to normal by shifting the pacemaking from the ventricles or auriculoventricular node back to the sinus node. This is the basis of the prophylactic use of dilute solutions of procaine during anesthesia in actual or potential cases of arrhythmia, such as thyrotoxicosis or disease of the arteries. Such therapy has been successful in forestalling cardiac complications by reducing the irritability of the heart. One questions the rationale of using epinephrine alone or in conjunction with procaine. The hazards are many. If there is a response, rise of blood pressure may be excessive. Intracardiac injection may be responsible for pulmonary puncture, pneumothorax or hydrothorax occurring later. Damage to cardiac vessels may occur, and hemopericardium and tamponade may result. These accidents in themselves are enough to tip the scales against the patient. Epinephrine will add insult if the basic condition is ventricular fibrillation. Bailey's series and others indicate that use of epinephrine, procaine, cardiac massage and, of course, artificial respiration are not adequate to meet crises when they occur. Expert choice of anesthetic agents and methods of administration offers most in prevention. Administration of atropine preoperatively is warranted. Maintenance of adequate respiratory exchange is essential. Likewise, maintenance of cardiac intake and output in the presence of peripheral vascular relaxation and dilatation is of paramount

importance. Crystalloids in solution, plasma or blood may be given to maintain circulating volume, and in the face of suspected difficulty procaine in dilute solution may be given prophylactically with these substances. Is it not possible that intra-arterial injection of fluids might be effective in raising arterial pressure, filling the coronaries and even producing internal cardiac massage with beneficial results? Certainly femoral injection of fluids is not likely to produce complications which in themselves may be fatal unless excessive intra-arterial pressures are produced. Only after instituting every precautionary method, including establishment of adequate respiratory exchange, administration of procaine intravenously with or without atropine and intra-arterial injection of fluids, only then would I advocate cardiac massage unless the abdomen or thorax were already opened.

DR. FRANK H. LAHEY, Boston: These are appalling situations in which to participate. I have participated in some of them and they are hair raising. There are one or two things which I could say, from the surgeon's point of view, to the effect that success will in large measure depend on the quickness with which this situation is interpreted. There is one important thing that has been proposed by Bailey and others but not mentioned here, that some one take the responsibility of letting every one know that the time amounts to ten seconds, twenty seconds, thirty seconds, forty seconds, fifty seconds, one minute. That is important because the time is so limited and the emergency is so great that the smallest amount of time lost is important, and the loss of team rhythm is very important. The last incident of this sort in which I happened to be a bystander was the one reported here, in which the team rhythm was almost perfect, the discovery was early, the instruments and materials were at hand, the chest was open and the recovery was complete. In some of the others, the team rhythm has not been so good. I talked to Dr. Nicholson and I have talked with our thoracic surgeon in connection with the cardiac exposure. I would agree that one can waste a little time if the abdomen is open. I have had the personal experience of massaging these hearts through the diaphragm and I should like to remark that the massage spoken of is not much more than a tickle. This picture of Dr. Ruzicka's might be a little misleading, About all that one does is to bump the apex up through the diaphragm. One does not massage it. An aperture beneath the ensiform appendix through which the thumb may be introduced is not a really effectual way of compressing the heart. If the discovery is early and there be time, there might be a very short time devoted to attempts to accomplish resumption of the heart beat, but if not and if a direct approach has to be made, it should be through the chest and the heart exposed so that one can get at the heart directly and actually massage it effectually. The case reported by Adams and Hand from our clinic was a graphic illustration of what can be done with early discovery and effectual action. There was a case in which twenty-two minutes passed before heart action was restored, and I saw the man the next day in perfect condition and with a normal electroencephalogram. When the emergency is so great, one can afford direct exposure of the heart. Our recovery rate of 30 per cent is low, but the statistics can be improved if we will get organized to meet this condition, which will occur occasionally.

DR. EDWIN R. RUZICKA, Boston: The only thing that I can say is that we, in our position as anesthesiologists, have gone through the agony of these situations with the surgeons and with reluctance to expose the heart or recommend any radical procedure. We have reached the conclusion, however, that the time limit is so short, the emergency so urgent, that any treatment must begin immediately to be effective. Cardiac massage is effective and is treatment applied directly to the seat of the trouble.

Clinical Notes, Suggestions and New Instruments

NEW APPROACH TO THE TREATMENT OF ESOPHAGEAL VARICES

MAX L. SOM, M.D.
and
JOHN H. GARLOCK, M.D.
New York

The therapy of hematemesis due to bleeding varicosities of the esophagus has been unsatisfactory. The various methods heretofore recommended for the control of exsanguinating hemorrhages from varices of the esophagus have not yielded permanent relief. At most, temporary arrest of hemorrhage can be expected from such acknowledged procedures as are now at our disposal. Ligation of the coronary vein of the stomach and splenectomy with severance of the short gastric vein is not a logical approach to control the esophageal bleeding. Attempts to obliterate the veins by injection of sclerosing solutions may offer temporary results; but recurrence of hemorrhage is the general rule. Patterson and Rouse [1] and Welt and Blatteis [2] have reported some measure of success with the injection treatment, but uniform results were not obtained. The experiences of one of us (M. L. S.) with this method of therapy, employing the technic of Moersch,[3] have been disappointing.

Repeated failures with accepted methods of treatment recalled an isolated instance in which apparent success was obtained accidentally. Bleeding from esophageal varices was arrested after mediastinotomy for traumatic perforation of the esophagus.

REPORT OF CASES

CASE 1.—In 1941, B. S., a 35 year old man, was referred for esophagoscopy because of repeated hematemesis following an attack of acute catarrhal jaundice one year previously. After some difficulty in passing the cricopharyngeus, the tube was introduced and the esophagus examined. Many bulging varices protruding into the lumen of the lower part of the esophagus were visualized. The source of bleeding having been ascertained, the esophagoscope was withdrawn. The patient complained of severe interscapular pain, and a roentgenogram showed air in the posterior mediastinum. Immediate operation for exposure of the esophagus with packing of the posterior mediastinum was performed. Mediastinitis developed which drained for several weeks; the patient then made an uneventful recovery. He has had no further bleeding since that time six years ago.

The veins of the esophagus are most abundant in the submucosa, but they are often internal to the muscularis and hence lie immediately beneath the mucosa. A periesophageal plexus of veins is also present in the fibrous layer. All the venous channels are closely connected by perforating and communicating vessels. In the lower part of the esophagus the submucosal plexus is poorly supported by connective tissue, but in the cardia the veins are subserosal and are more firmly enveloped by the musculature of the stomach.

Kegaries [4] injected the coronary vein of the stomach and demonstrated a fine capillary anastomosis at the lower end of

From the Laryngological Service of Dr. Rudolph Kramer and the Surgical Service of Dr. John H. Garlock, the Mount Sinai Hospital.

1. Patterson, C. O., and Rouse, M. O.: Injection Treatment of Varix of Esophagus, J. A. M. A. **130**: 384-386 (Feb. 16) 1946.

2. Welt, B., and Blatteis, S. R.: Esophageal Varices, Am. J. Surg. **63**: 415-517 (March) 1944.

3. Moersch, H. J.: Esophageal Varices: Further Studies on Treatment by Injection of a Sclerosing Solution, Ann. Otol., Rhin. & Laryng. **50**: 1233-1244 (Dec.) 1941.

4. Kegaries, D. L.: The Venous Plexus of the Esophagus, Surg., Gynec. & Obst. **58**: 46-51 (Jan.) 1934.

the esophagus between the caval and portal circulation. Extensive connections were apparent between the veins of the lower end of the esophagus and the cardia through the coronary vein, and the spleen through the vasa brevia. He was unable to demonstrate a true periesophageal plexus, but a system of longitudinal venous trunks could be seen surrounding the esophagus.

Hypertension of the portal circulation most often accompanies cirrhosis of the liver. Obstruction of portal or splenic vein produces an increase in the blood flow through the collateral esophageal plexus with a resultant elevated venous pressure. Varices develop because the esophageal veins, distended by the increased flow and only scantily supported by areolar tissue, cannot withstand the elevated venous pressure. The veins in the submucosa are those more subject to the formation of sacculation and varices, which protrude into the lumen of the esophagus and become vulnerable to trauma.

We considered the feasibility of the formation of extensive granulation tissue in the posterior mediastinum between the fibrosa of the esophagus and the prevertebral fascia. On the assumption that many new vascular channels would accompany these granulations we hoped to reroute the blood from the portal to the caval circulation by new vessels in the posterior mediastinum. The periesophageal plexus of veins could possibly carry the burden of the venous flow more efficiently than the submucosal veins. The stimulation and creation of such anastomotic channels outside the esophagus would establish a collateral circulation in veins not subject to trauma.

The favorable effect which the packing of the mediastinum probably exerted on the varices in our first case encouraged us to repeat the operation as an experimental procedure. When other methods of treatment for bleeding varices proved futile, we decided to repeat the surgical procedure on the assumption that the irritation incident to the packing and infection established a collateral circulation in the posterior mediastinum.

A patient was selected who had been treated by every known method, yet persisted in having exsanguinating hemorrhages. He had had a splenectomy and received many injections of 5 per cent sodium morrhuate into the varices without relief.

CASE 2.—E. R., a 29 year old man, was transferred from another hospital to the Mount Sinai Hospital on April 14, 1943 in order to receive sclerosing injections for varices of his esophagus. There was a history of severe injury to his spleen eight years before, accompanied by episodes of hematemesis. He was well for seven years and then began to have intermittent tarry stools associated with definite weakness and moderate exertional dyspnea. The patient first was admitted to the referring hospital in 1942 because of hematemesis and melena. A diagnosis of Banti's disease was made, and esophageal varices were demonstrated on roentgen examination. A splenectomy was performed and the patient was free of bleeding for six months following this procedure. When severe bleeding recurred he was advised to have injection treatment of the varices.

On admission to the Mount Sinai Hospital his general physical examination was normal except for pallor. The liver was not palpable, and there was an abdominal scar from the former splenectomy. His hemoglobin was 57 per cent, red blood cell count 3,700,000 and white blood cell count 11,500, with 59 per cent polymorphonuclear leukocytes, 29 per cent lymphocytes, 8 per cent monocytes and 4 per cent eosinophils. The guaiac test for blood in stools and the Wassermann test elicited negative reactions. Cholesterol was 250 mg., the icteric index 2 and the total proteins 7.6 mg. per hundred cubic centimeters.

He returned five times during the next three months as an ambulatory patient for injection of the esophageal varices with sodium morrhuate.

On August 26, four months after the first treatment, he was readmitted to the medical service of Dr. George Baehr at the Mount Sinai Hospital because of tarry stools of one week's duration, followed, on the day of admission, by a massive hemorrhage with syncope. His hemoglobin was 16 per cent and his blood showed polychromasia, achromia and anisocytosis. Five transfusions of 500 cc. each of whole blood brought the hemoglobin up to 55 per cent on discharge.

In the ensuing six month period his varices were injected on two occasions. He continued to bleed and was readmitted in March 1944 with a hemoglobin value of 38 per cent; he again received 2,500 cc. of blood by transfusion.

From June 1944 to November 1945 the varices of the esophagus were injected with sclerosing solution on fifteen occasions. At no time did he have an interval free of bleeding for more than eight weeks.

During this period he required hospitalization on four different occasions for repeated transfusions to maintain his hemoglobin at a level between 50 and 60 per cent.

On November 26, 1945 he was readmitted to the hospital after a massive hemorrhage. His hemoglobin value was now 48 per cent, and he immediately received two blood transfusions of 500 cc. each. It was apparent that the sclerosing therapy had proved ineffectual in controlling the bleeding.

The patient was transferred to the surgical service of Dr. John H. Garlock, who performed a superior-posterior mediastinotomy, using local anesthesia. An oblique incision along the left sternomastoid muscle was made. The thyroid lobe was retracted mesially, the carotid sheath laterally, and the esophagus identified after ligation of the middle thyroid vein. The posterior mediastinum was bluntly opened and a finger introduced down to the arch of the aorta. This entire area was freely packed with iodoform gauze. He received penicillin, 20,000 units every three hours, because of suspected pneumonia in the lower lobes of both lungs. The packing was withdrawn slowly after eleven days, and he made an uneventful recovery from this procedure.

Esophagoscopy was done two months later, and varices were seen at 30 and 35 cm. from the upper incisor teeth. His hemoglobin was now 34 per cent, and he received two blood transfusions of 500 cc. each with a rise in hemoglobin to 61 per cent. He was well for eight weeks, and on April 22, 1946 he had another hematemesis and tarry stool. His hemoglobin remained at 65 per cent after the bleeding; yet he received 300 cc. of blood by transfusion. Esophagoscopy three days later showed the upper three quarters of the esophagus to be normal and fibrotic varices around the cardia.

The patient has had no recurrence of bleeding for the past fourteen months and has remained in excellent health. His weight showed an increase of 40 pounds (18.1 Kg.) and his hemoglobin on the last examination was 110 per cent. He has been employed at a new job for the past year and leads a routine normal energetic existence.

COMMENT

This is the first report of 2 patients with recurrent hematemesis from esophageal varices in whom a posterior mediastinotomy was successful in controlling the bleeding. The first patient has been free of hemorrhage for six years, and the second fourteen months. The desperate situation of the second patient makes the result all the more impressive. The first patient has refused to permit another endoscopy because of his well-being. Esophagoscopic examination of the second patient showed the esophagus to be free of varicose veins in its upper three quarters and fibrotic shrunken varices surrounding the cardia.

Our purpose in creating a new collateral circulation in the posterior mediastinum seems to have been realized. We assumed that the irritation of the packing promoted granulation tissue with a new vascular network between the submucosal and periesophageal veins of the esophagus and the deeper venous channels of the mediastinum. The venous blood from the portal circulation might now be rerouted in the deeper channels of the esophagus to be returned to the caval circulation by the azygos veins. The new deeper channels and the periesophageal plexus could more easily and safely carry the increased blood flow than the vulnerable submucosal veins of the esophagus.

INTRAESOPHAGEAL VENOUS TAMPONAGE

Its Use in a Case of Varical Hemorrhage from the Esophagus

L. G. ROWNTREE, M.D.
E. F. ZIMMERMAN, M.D.
M. H. TODD, M.D.
and
JOHN AJAC, M.D.
Miami Beach, Fla.

Bleeding from the esophagus still constitutes a frequent cause of death in cirrhosis of the liver, despite the numerous and varied procedures devised for its prevention and cure. The methods employed heretofore may be divided into direct and indirect procedures. The former include surgical ligation of the contributory veins or their ligation and subsequent injection with sclerosing agents, and also the direct injection of the varices or their cauterization through the esophagoscope. In the indirect categories are the time-honored Eck fistula recently revived by Blalock, and omentopexy, and the newer "shunting" procedures involving anastomoses of the splenic to the left renal vein.

Confronted recently with prolonged, uncontrollable and what was finally believed to be terminal bleeding from the esophagus in a case of cirrhosis of the liver, we successfully employed the principle of internal venous tamponage. In our patient, the site of the bleeding was clearly visualized through the esophagoscope, but because of the constant welling of blood into the field of vision it was considered unwise to attempt the injection of the sclerosing solution. The idea of internal venous tamponage was suggested by one of us (L. G. R.), and a crude apparatus was immediately devised. As all the physicians concerned felt that death was imminent, recourse was had to this home-made device for applying pressure at the site of hemorrhage, with results that were completely satisfactory.

Data on the Blood Picture, the Use of Transfusions and Other Parenteral Therapy

Date	Red Blood Cells, Millions	Hemoglobin, Gm.	Transfusion, Whole Blood, Cc.	Other Parenteral Fluids, Cc. "Amigen" Solution	Other Parenteral Fluids, Cc. Plasma	Clinical Course
3/11	2.94	8.5	...	.....	...	
3/13	1.61	7.5	500	1,000	...	Emesis, blood
3/14	....	...	500	1,000	...	
3/15	2.49	7.5	...	.....	...	
3/17	1.64	5.25	500	.....	...	
3/18	2.28	7.5	500	.....	...	Emesis, 300 cc. blood
3/19	....	...	1,000	.....	...	Emesis, 400 cc. blood
3/20	....	...	500	.....	500	Emesis, 200 cc. blood
3/21	1.53	4.5	1,000	1,000	...	
3/22	2.05	7.00	500	1,000	...	
3/23	....	...	...	1,270	...	
3/24	....	...	500	2,000	...	Emesis, 150 cc. blood
3/26	1.93	6.0	1,500	1,000	...	Emesis, 600 cc. blood
3/27	1.88	5.75	500	1,000	...	Tamponade inserted but expelled
3/28	1.66	5.0	1,000	2,000	...	Tamponade reinserted
3/29	....	...	500	1,500	...	Bile removed by gastric portion of tamponade, but no blood present
3/30	....	...	500	2,000	...	
3/31	2.23	7.5	500	2,000	...	Tamponade removed
4/1	....	...	500	2,000	...	High protein oral feeding began
4/2	2.09	8.3	...	2,000	...	Ascites developed
4/3	3.19	11.0	500	2,000	...	
4/5	....	...	...	.....	1,000	
4/6	....	...	...	.....	...	Mercurophylline injection, 0.5 cc. followed by 1 cc. daily
4/9	....	...	...	.....	500	
4/10	3.56	10.05	500	1,000	...	
5/15	4.6	13.0	Patient to be discharged			

During the period March 11 to March 31, 1947, the amounts indicated were administered..... { 11.5 liters of whole blood; 2.0 liters of plasma; 23.0 liters of "Amigen"

From the Nautilus Hospital—Veterans' Administration.

REPORT OF A CASE

J. R., age 56, white, a salesman by occupation, was admitted to the Veterans Administration Hospital, Miami Beach, Fla., March 11, 1947, complaining of melena. The admission history revealed the fact that this patient had been a heavy drinker, consuming approximately 1 pint of spirits daily over a period of many years. However, he stopped drinking in the fall of 1945. He had had, in all, beginning in 1938, ten episodes of bleeding from the esophagus, one of which had required a transfusion of 500 cc. of whole blood.

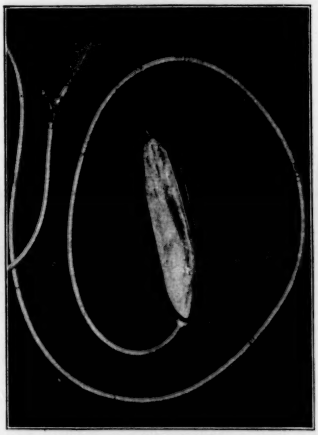

Fig. 1.—Latex bag attached to the distal end of Miller-Abbott tube, all the perforations of which were occluded except the lower three. If preferred, this latex bag may be attached to the double lumen tube, 2 or 3 inches above its distal end. Whether or not this is universally desirable is being determined at the present time.

The present attack began two days prior to admission and was characterized by a sensation of weakness, followed by passage of tarry stools up to four to five daily. Physical examination revealed no gross abnormalities other than an enlarged liver and a palpable spleen. Sigmoidoscopy was negative in result. At a later date esophagoscopy revealed active and profuse bleeding from a varix located in the terminal end of the esophagus (Dr. N. Levin).

Fig. 2.—The apparatus in situ and distended with 120 cc. of iodopyracet ("diodrast").

The clinical course was downward from the beginning. The bleeding continued, in all, for some nineteen days. The patient became exsanguinated, despite repeated transfusions and the use of large quantities of "amigen" N. N. R. (a hydrolysate of casein), plasma and hemostatic agents. Blood was frequently vomited in large amounts and red blood was passed also by rectum. The situation became progressively worse until the patient was considered in extremis and the outlook hopeless.

The data concerning the blood picture, the use of transfusions and other parenteral therapy are presented in the accompanying table.

Despite frequent transfusions, the patient became progressively more anemic and finally presented a total red blood cell count of 1,660,000, as compared with 2,900,000 on admission.

Employment of Internal Tamponage.—On March 27, as a last resort, it was decided to employ internal venous tamponage. An apparatus was devised and inserted, and the latex bag inflated with 120 cc. of air. However, this apparatus was expelled some five hours later. In the interim, a more effective tamponage was devised (figs. 1 and 2) and immediately employed. This was inserted, inflated, corked and left in place for four days with little or no discomfort to the patient. On the day following its insertion, bile-stained gastric contents were recovered from the gastric portion of the tube, but no blood was detected. Throughout the time that the tamponage was in place no bleeding occurred and no blood was recovered from the stomach, and the melena gradually disappeared. The patient was fed a high protein diet through the gastric portion of the tube, and the blood cell count showed a continuous improvement from 1,660,000 red blood cells and 5 Gm. of hemoglobin on March 28 to 4,600,000 red blood cells and 13 Gm. of hemoglobin on May 15.

It is of interest to note that on April 2 ascites began to develop and mercurophylline injection was used. The ascites was easily controlled and did not become a serious clinical problem. However, it was thought that the tamponage of the esophageal veins may have been a factor in its pathogenesis and the dynamics of its development.

During the next two months the patient gained gradually in health and strength and the blood level was restored to normal. However, on May 25 hemorrhage recurred, the patient vomiting at least 750 cc. of blood. He was immediately put to bed and the tube reinserted. Bleeding was promptly controlled, as evidenced by the absence of blood in the gastric contents. The tube was removed without incident after seventy-two hours. Obviously the employment of the internal venous tamponage is only of a palliative nature but apparently it is effectual in control of venous bleeding.

This case is presented (1) in the belief that internal venous tamponage proved lifesaving in the control of this patient's esophageal bleeding, which had resisted all other forms of treatment, and (2) with the hope that others may adopt this procedure in order to ascertain its general efficacy in this connection. In the event that the principle of tamponage is universally successful in the control of esophageal bleeding, its value in other types of hemorrhage (rectal, nasal, duodenal, etc.) must be determined.

NOTE.—From the model used in this case, George P. Pilling & Son, Philadelphia, are cooperating in the development of the most effective type of tube for the purpose of internal venous tamponage.

Westphal (cited by Kaplan, B.: M. Rec. **154**:175 [Sept. 3] 1941) has been reported to have used, in 1930, Gottstein's sound distended with air or water for tamponage over a period of twenty-four to twenty-nine hours. He also employed antiseptic gauze for tamponage when the point of the hemorrhage was at a higher level. Aside from this, we have found no other reference to the employment of tamponage in the control of bleeding from the esophagus.

Since the use of this tube, three of us have personally swallowed the apparatus, and, when it was inflated with air and opaque fluid, it was observed fluoroscopically and roentgenographically. Electrocardiographic and blood pressure studies were obtained during the experiments, the details of which will be published at an early date.

Just prior to submission of this article, a second patient with esophageal bleeding in cirrhosis of the liver was admitted to this hospital. The bleeding had continued over a three day period without any indication of decreasing. The esophageal tamponage bag was employed, as in the case reported. The blood count at this time was 2,600,000 red blood cells. The tube was left in place for forty hours without any untoward effect and with complete cessation of the bleeding, as indicated by the absence of blood when the gastric contents were examined through the gastric portion of the tube. The patient is presently being fed orally and is apparently recovering from this episode.

NITROGEN MUSTARD IN THE TREATMENT OF MYCOSIS FUNGOIDES

O. S. PHILPOTT, M.D.
A. R. WOODBURNE, M.D.
and
G. A. WALDRIFF, M.D.
Denver

Nitrogen mustard has been used in the treatment of a case of mycosis fungoides.

REPORT OF CASE

C. D., a man aged 79, had mycosis fungoides for the past four years. Lesions evolved through the premycotic and mycotic stages in the usual fashion. Previously roentgen therapy had controlled the infiltrations and tumors nicely.

On Feb. 11, 1947 this patient entered Colorado General Hospital for nitrogen mustard (methyl-bis [beta-chloroethyl] amine hydrochloride) therapy for recurrence of the lesions. Infiltrated tumors and plaques were present over the entire body together with hyperpigmented areas which were the vestiges of previous infiltrates.

Fig. 1.—Before nitrogen mustard therapy numerous tumors and infiltrated plaques were generalized over the entire surface of the body.

The medical examination including a roentgenogram of the chest as well as an electrocardiogram was completed with the opinion that this patient could tolerate nitrogen mustard therapy.

The currently accepted dosage scheme was followed, i. e., 0.1 mg. per kilogram of body weight. This was prepared by dissolving the white crystalline powder in isotonic sodium chloride solution so that the calculated dose was incorporated in 25 cc. of isotonic sodium chloride solution, which was then injected intravenously. The dose was to be administered daily on each of four consecutive days.

The fourth and last of the intravenous injections was deferred because of the rapid drop in the platelet count. From the first there was no reaction of any type immediately following the actual mechanical injection of the nitrogen mustard solution. However, beginning on the second day there was a progressive nausea with concomitant loss of appetite. On February 15 because of the depressed blood values the patient was given a transfusion of 500 cc. of whole blood. On February 17 and again on February 22 he was transfused with 500 cc. of whole blood.

From the Department of Dermatology and Syphilology, University of Colorado School of Medicine and Hospitals, O. S. Philpott, M.D., Professor.

Fig. 2.—The corium is densely infiltrated with histiocytes, most of which are polymorphic and show mitotic figures. Lymphocytes, plasma cells and polymorphonuclear cells are numerous. Reticulum is plentiful (× 175).

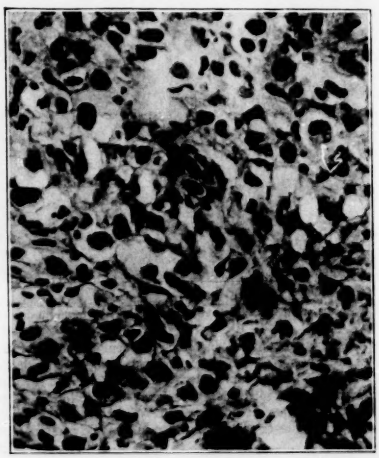

Fig. 3.—Same as figure 2 (× 500).

Beginning February 14, the third day of therapy, there was a slight elevation of temperature; on February 16 this became almost septic in type, reaching 103.8 F. The fever was associated with chills, coughing, expectoration and the clinical observation of moist rales over the upper lobe of the left lung. Roentgenograms of the chest were negative. The patient was placed on penicillin therapy for the remainder of his hospital stay. The temperature returned to normal February 19 and remained so.

Fig. 4.—After nitrogen mustard therapy all tumors and infiltrations have disappeared, leaving areas of hyperpigmentation.

Fig. 5.—After nitrogen mustard therapy, as in figure 4.

On February 21 the patient became extremely recalcitrant, refusing medicaments and food. During the ensuing days he became more and more uncooperative.

On February 24 it was observed that the infiltration had disappeared from most of his lesions, leaving a hyperpigmented nonindurated skin, and that he no longer complained of itching.

It is remarkable that on February 25 an electrocardiogram manifested a decided change over the one taken prior to nitrogen

Laboratory Data

Date in February 1947	11	12	13	14	15	17	19	20	25
Nitrogen mustard (mg.)	....	5.9	5.9	5.9	....	....	....	....	....
Hemoglobin (%)	10.5	10.8	....	10.1	9.7	9.8	12.2	....	13.3
Red blood cells (millions)	3.65	4.04	....	3.02	3.94	3.0	3.88	....	4.0
White blood cells (thousands)	3.6	5.2	....	4.6	5.4	5.2	4.4	....	4.3
Polymorphonuclears (%)	71	64	....	73	75	87	79	....	57
Lymphocytes (%)	21	33	....	26	20	13	19	....	38
Endocytes (%)	7	3	....	1	4	0	2	....	5
Eosinophils (%)	0	0	....	0	0	0	0	....	0
Basophils (%)	1	0	....	0	1	0	0	....	0
Sedimentation rate (60 min.)	..	106	108	114	108	102	....	....	....
Platelets (thousands)	..	80	..	70	40	60	40	....	....
Nonprotein nitrogen (mg./100 cc.)	..	39	..	....	....	42	....	52	....
Urea nitrogen (mg./100 cc.)	..	..	..	....	....	25	....	40	....
Creatinine (mg./100 cc.)	..	..	..	....	....	1.8	....	2.2	....
Plasma carbon dioxide (vols. %)	..	59	..	....	....	51	....	60	....

mustard therapy. There was a depressed ST segment in leads 2 and 3 together with a pronounced S wave in CF_6. The question was raised by the cardiologist of pulmonary fibrosis or infarction. This patient had been an old hard rock miner and had had a well defined silicosis with asthmatic symptoms for some years.

On February 25 the patient's daughter signed a release, and the patient was discharged against advice. The patient, lost from our control, died several weeks later. An autopsy was not performed.

CONCLUSIONS

Nitrogen mustard (methyl-bis [beta-chloroethyl] amine hydrochloride) seems to be extremely effective in controlling pruritus and causing involution of the tumors and infiltrated plaques of mycosis fungoides. Since the lesions disappeared so rapidly and because of the unfavorable reactions in our patient, it might be safer and equally effective to treat mycosis fungoides with somewhat smaller doses of nitrogen mustard than those previously recommended.

CONGENITAL MORPHINISM

A Rare Cause of Convulsions in the Newborn

MEYER A. PERLSTEIN, M.D.
Chicago

A rare and little known cause of convulsions in the newborn is congenital morphinism. Although unmentioned in standard textbooks of pediatrics or medicine, it is known to physicians whose patients include morphine addicts and who thus have learned that children born to addicted mothers often die in the first week of life. The infants are born at full term and are apparently normal, but their addiction matches that of their mothers. Separation from the maternal circulation shuts off the supply of drug to the newborn, and withdrawal symptoms ensue within three days.

Infrequent reports of congenital morphinism have appeared in the literature, the first in 1875.[1] In 1892 Happel reported the cases of 12 infants born to mothers who were drug addicts. Nine of the 12 infants died.[2] In 1900 he added 5 more cases.[3] In 1903 a correspondent, O. D., wrote in "Queries and Minor Notes" of THE JOURNAL[4] of a baby born to a mother who had been addicted to morphine for three years. At birth the infant appeared normal, but on its second day it began to cry and continued to do so for two days, until treated with morphine 1/120 grain (0.5 mg.) every other day. In 1912 Pettey reported on 20 infants born to 4 addicted mothers. One of these mothers had 16 infants, all but the last of whom died. The last infant was treated early and made an uneventful recovery.[5] In 1920 Burnett reported a case in which symptoms appeared six hours after birth, the infant dying in convulsions on the third day of life.[6] In 1934 Menninger-Lerchenthal, in an extensive review, cited 50 cases of congenital morphinism in German journals and 53 in the American literature.[1] Tow's *Diseases of the Newborn* is to my knowledge the only textbook on pediatrics to describe congenital morphinism as a cause of convulsions in the newborn.[7] He describes (in a personal communication) 13 cases, in 6 of which the infant died in spite of treatment. Three infants died before the fifth day of life, the other 3 at 3 weeks to 3 months of age.

REPORT OF CASE

A full term female infant was delivered July 9, 1941 by cesarean section to a known morphine addict aged 34. During her pregnancy and on the day of her delivery the mother was taking, intravenously, an average of 10 grains (0.65 Gm.) of morphine a day. She stated that seventeen years earlier (prior to addiction) she had given birth to a girl who is still living and apparently normal.

The present infant weighed 7 pounds 5 ounces (3,317 Gm.) at birth and appeared normal. There was no cyanosis or dyspnea. On the third day of life it was noted that the infant was irritable and restless. Although she fed readily, she vomited and passed liquid stools. By the end of the fourth day her symptoms became exaggerated and generalized tremors appeared. At that time her weight had dropped to 1½ pounds (680 Gm.) below that at birth. She slept fretfully, and when she was disturbed for feeding or general care, she cried, held her breath and on occasion had generalized clonic convulsions. The administration of vitamin K and parenteral calcium gluconate yielded no demonstrable benefit. Physically and neurologically the child was normal except for a palpable spleen and (probably congenital) bilateral, horizontal nystagmus. Determinations of blood sugar, phosphorus and calcium were all within normal limits. Lumbar puncture yielded normal spinal fluid. The blood at this time revealed no trace of morphine. (This would not eliminate congenital morphinism, since the drug is entirely excreted by the fifth day.) Fortuitously, however, the child was born in the midst of a study on vernix caseosa, so that her vernix as well as that of others had been preserved. Qualitative tests for morphine on the vernix of this infant were positive.

Treatment consisted essentially of sedation. It was noted that the administration of phenobarbital, ⅛ grain (8 mg.) every four hours, allayed all symptoms. Almost immediately the tremors diminished, vomiting and diarrhea ceased and the child began to gain weight. Recovery then proceeded uneventfully, and the infant was discharged on the tenth day, 1 pound (454 Gm.) under birth weight. Occasional tremors until the infant was 1 month of age were noted by the mother. The infant was given phenobarbital for eight weeks, after which the dosage of the drug was tapered and stopped.

Follow-up observation during the child's first year disclosed normal development. She turned over at the age of 3 months, sat at 7 months and stood with support at 1 year. The nystagmus noted at birth persisted, and at the age of 2 months head-nodding and typical spasmus nutans appeared; they gradually abated by the time the infant was 1 year of age.

COMMENT

It has been known for some time that morphine passes readily through the placenta in sufficient quantities to cause addiction in the fetus. However, in the past some investigators erroneously assumed that morphine was excreted in human milk; hence, breast-feeding by the addicted mother was a method employed in the treatment of congenital morphinism. It is a fact, though, that morphine is not thus excreted,[8] and the emphasis in treatment is now directed toward sedation.

Symptoms of congenital morphinism appear within twenty-four hours after birth, reach their peak by the third day and then gradually subside in five to fourteen days if the child survives. The infant initially becomes extremely irritable, yawns and sneezes. Restlessness, weakness, anorexia, vomiting and diarrhea ensue. Loss of weight because of inadequate dietary intake and dehydration is pronounced. In the final stages there appear cramps, tremors, coma and convulsions.

CONCLUSION

Although congenital morphinism is rare it should be considered whenever the source of convulsions in the neonatal period is obscure and the more frequent causes have been ruled out.

4743 North Drake Avenue.

1. Menninger-Lerchenthal, E.: Die Morphinkrankheit der Neugeborenen morphinistischer Mütter, Monatschr. f. Kinderh. **60:** 182-193, 1934.
2. Happel, T. J.: Morphinism in Its Relation to the Sexual Functions and Appetite, and Its Effect on the Offspring of the Users of the Drug, Tr. M. Soc. Tennessee 162-179, 1892; M. & S. Reporter **67:** 403-407, 1892.
3. Happel, T. J.: Morphinism from the Standpoint of the General Practitioner, J. A. M. A. **35:** 407-409 (Aug. 18) 1900.
4. Fetal Morphine Addiction, Queries and Minor Notes, J. A. M. A. **40:** 1092 (April 18) 1903.
5. Pettey, G. E.: Congenital Morphinism, with Report of Cases: General Treatment of Morphinism, Memphis M. Month. **32:** 37-63, 1912; Charlotte (N. C.) M. J. **65:** 95-98, 1912.
6. Burnett, S. G.: Morphinism in Pregnancy and the Newborn, M. Herald, St. Joseph **39:** 161-163, 1920.
7. Tow, A.: Disease of the Newborn, New York, Oxford University Press, 1937, p. 395.
8. Solimann, T.: A Manual of Pharmacology, Philadelphia, W. B. Saunders Company, 1942, p. 270.

Council on Pharmacy and Chemistry

REPORT TO THE COUNCIL

The use of streptomycin for the treatment of tuberculosis has aroused much interest which has resulted in extensive research. The following reports have been adopted by the Council for publication and they are offered to keep the medical profession informed of the progress that is being made and to minimize some of the confusion that is arising concerning this treatment of tuberculosis. In adopting these reports, the Council expresses its appreciation of the cooperation that has been provided by the various groups submitting these statements and hopes that such collaboration will serve as a pattern for future research of such fundamental importance.

AUSTIN SMITH, M.D., *Secretary.*

THE EFFECTS OF STREPTOMYCIN ON TUBERCULOSIS IN MAN

Preliminary Statement

The Veterans Administration, the Army and the Navy have been engaged since June 1946 in a joint investigation into the effects of streptomycin on human tuberculosis. Over 900 patients have been treated (table 1), of whom 543 had completed treatment prior to May 1, 1947, at which time the participants reviewed their experience at a three day conference in St. Louis.

TABLE 1.—*Types of Tuberculosis Treated with Streptomycin*

Type of Disease	Finished Treatment	Under Treatment		
		61-119 Days	1-60 Days	Total
Pulmonary	245	123	66	434
Genitourinary	15	21	5	41
Bone and joint	1	19	4	24
Lymph node and sinus tract	30	39	21	90
Tracheobronchial and laryngeal	26	36	19	81
Alimentary tract	16	..	..	16
Peritoneal	9	..	..	9
Pericardial	8	..	..	8
Cutaneous, ocular	5	..	..	5
Miliary and meningeal	84 (65 dead)	31	3	118
Thoracic surgery prophylaxis	104	..	..	104
Total	543	269	118	930

While, obviously, several years must elapse before any definitive statement can be made as to the place of streptomycin in the therapy of tuberculosis, the series of cases seemed sufficiently large and the immediate results, in some respects, sufficiently definite to warrant the issuance of this preliminary statement.

BACKGROUND

Soon after the discovery of streptomycin was announced from Waksman's laboratory [1] in 1944, and after its effect on cultures of the tubercle bacillus had been demonstrated, Hinshaw and his collaborators at the Mayo Clinic undertook to study its effect on tuberculosis, at first in the laboratory with guinea pigs [2] and then in the clinic with patients. Their reports of the results of streptomycin therapy in the first cases of human tuberculosis were published in September 1945 [3] and November 1946.[4] In January 1946, with funds provided by the Streptomycin Producers Association, the Committee on Chemotherapeutics and Other Agents of the National Research Council launched a small but important study, directed primarily at the toxicity of streptomycin in tuberculous patients, under McDermott [5] at Cornell.

There was thus available to the federal agencies, at the time their investigation was designed, considerable information as to the effectiveness and dangers of streptomycin in the treatment of human tuberculosis. Without this information the investigation would not have been undertaken.

PLAN OF INVESTIGATION

The federal agencies, acting through a Joint Streptomycin Committee for Tuberculosis, decided to adopt, and did prepare in May 1946, a uniform protocol for the treatment of pulmonary disease. The chief components of this protocol were the criteria to be used in the selection of cases, the dosage regimen which was to be followed, and the laboratory data which would be required prior to and during treatment.

In the selection of cases it was agreed (*a*) that all cases would have been observed for a period of at least sixty days prior to the initiation of treatment and that during this period the pulmonary lesion would have become more extensive or, at best, remained stationary; (*b*) that tubercle bacilli would have been recently recovered from the sputum or gastric contents and that confirmation of their identity by inoculation into guinea pigs, or by culture, would have been started; (*c*) that moderately advanced disease would be preferred but that far advanced disease would be acceptable, provided the patient had an estimated life expectancy of at least twelve months without streptomycin therapy; (*d*) that the x-rays would disclose some exudative component, the more the better, in the pulmonary lesion; (*e*) that all patients would preferably have been on complete bed rest prior to therapy but, if this was not the case, that they would observe the same degree of physical activity during therapy as was in effect before treatment was started; (*f*) that pneumothorax would not be present on the side toward which treatment was primarily directed; (*g*) that no collapse procedures would be initiated during treatment but, if pneumoperitoneum, phrenic paralysis, or contralateral pneumothorax was present prior to treatment, they would be maintained at the preexisting level. An initial stipulation concerning age was subsequently withdrawn. In a further attempt to obtain a uniform type of pulmonary disease, a member of the Joint Committee visited all study units to assist in the selection of cases. It soon developed, especially in Veterans Administration Hospitals, that there were surprisingly few patients with moderately advanced, or even with predominantly exudative, pulmonary disease who had not already received collapse therapy and who were, on that account, excluded from the study. In consequence, the great majority of Veterans Administration cases selected for treatment with streptomycin, as distinct

Manuscript prepared by the Offices of the Chief Medical Director, Veterans Administration, the Surgeon General of the Army and the Surgeon General of the Navy. Detailed reports of much of the work summarized herein will be submitted to the American Review of Tuberculosis for publication.

1. Schatz, A.; Bugie, E., and Waksman, S. A.: Streptomycin: Substance Exhibiting Antibiotic Activity Against Gram-Positive and Gram-Negative Bacteria, Proc. Soc. Exper. Biol. & Med. **55:** 66-69 (Jan.) 1944.

2. Feldman, W. H., and Hinshaw, H. C.: Effects of Streptomycin on Experimental Tuberculosis in Guinea Pigs: A Preliminary Report, Proc. Staff Meet., Mayo Clin. **19:** 593-599 (Dec. 27) 1944.

3. Hinshaw, H. C., and Feldman, W. H.: Streptomycin in Treatment of Clinical Tuberculosis: A Preliminary Report, Proc. Staff Meet., Mayo Clin. **20:** 313-318 (Sept. 5) 1945.

4. Hinshaw, H. C.; Feldman, W. H., and Pfuetze, Karl H.: Treatment of Tuberculosis with Streptomycin, J. A. M. A. **132:** 778-782 (Nov. 30) 1946.

5. Farrington, R. F.; Hull-Smith, H.; Bunn, P. A., and McDermott, W.: Streptomycin Toxicity, J. A. M. A. **134:** 679-688 (June 21) 1947.

from those of the Army and the Navy, were further advanced and were examples of a more fibrous and cavernous type of disease than had been originally planned. In a sense, this operated as an advantage, for it compelled observation on a wider variety of tuberculous lesions.

The regimen which was agreed on for all units was 1.8 Gm. of streptomycin a day, injected intramuscularly in equal doses of 0.3 Gm. every four hours "round the clock" for one hundred and twenty days. Subsequently, in December 1946, the daily dosage for new cases was altered to 2.0 Gm., 0.4 Gm. being injected at four hour intervals from 8 a. m. to 12 midnight, the 4 a. m. dose being omitted for the convenience of patients.

The laboratory observations which were to be made before and during treatment were prescribed in detail by the protocol. They need only be summarized here with the remark that, though a serious attempt was made to keep them as simple as was consistent with the protection of the patient and the acquisition of essential information, they proved so onerous that few hospitals could study more than 20 patients at a time. They included aural, renal and hematologic studies to discover toxicity, observations on changes in pulmonary lesions, sputums and body weights, on the development of resistance to streptomycin by the infecting organisms, and on the concentration of streptomycin in blood serum.

EXTENSION OF INVESTIGATION

As originally planned, the Army was to establish a single study unit at Fitzsimons General Hospital, the Navy a similar unit at Sampson, N. Y., and the Veterans Administration, since it carried the greatest tuberculosis load, five such units at Oteen, N. C., Sunmount, N. Y., Rutland Heights, Mass., Hines, Ill., and Livermore, Calif. These plans were fully effected by October 1946, with about 20 pulmonary patients under treatment in each of the seven units. In the meantime it had been decided to explore the effects of streptomycin on nonpulmonary tuberculosis, and groups of patients with cutaneous tuberculous sinuses, genitourinary tuberculosis and tuberculous tracheobronchitis had been collected and were under treatment by uniform regimens at three Veterans Administration hospitals (Oteen, N. C., Bronx, N. Y., and San Fernando, Calif.) as well as in the Army and Navy units.

By December of 1946 the preliminary results appeared sufficiently promising and the available supplies of streptomycin sufficiently large to warrant further expansion. Accordingly, thirteen additional study units[6] were authorized, bringing the total to twenty-two, of which twenty were in active operation by March 1947. Four additional protocols were prepared, and specified units were authorized to treat pulmonary disease, tuberculosis of lymph nodes, bone and joint, tuberculosis of the larynx and alimentary tract, tuberculous tracheobronchitis, and genitourinary tuberculosis. A sixth protocol, designed to investigate the protection against the spread of pulmonary infection incident to thoracic surgery, was also initiated in December and as of May 1947 was in effect at seventeen units. A seventh protocol covering the treatment of tuberculous empyemas is now in the course of preparation.

There remains one point in the organization of the study to describe. In June 1946 the federal agencies agreed to supply streptomycin for the treatment of all their patients with tuberculous meningitis and acute disseminated miliary tuberculosis in whatever hospitals they might occur. This resulted in the treatment of 118 proved cases within the next ten months. A further agreement was made by the Veterans Administration to treat "unusual" types of tuberculosis, under similar circumstances, in the hope that a series of sufficient size to provide evidence of the effectiveness of streptomycin might be obtained by this procedure. The word "unusual" was defined as including tuberculosis affecting the peritoneum, pericardium, eye and skin.

LIAISON

Desirable as a mass clinical experiment of this sort is, in a disease as protean in its manifestations and as unpredictable in its course as tuberculosis, it suffers from at least two obvious disadvantages: (1) the difficulty of assuring uniform selection of cases and uniform treatment; (2) the difficulty of maintaining liaison and collecting data. The Joint Committee attempted to surmount the former of these difficulties by using rather rigid protocols and leaving, for the first year, relatively little freedom of decision to the individual investigator. It combated the latter by the periodic visit of its members to all units, by the distribution to all units of their monthly progress reports, and by meetings at intervals of three or four months of all investigators in order to report their past findings and to formulate their future plans. Of these means, the last has proved itself the most valuable. Three such meetings have been held. They have been attended by all chief investigators, by the Joint Committee, by representatives from the U. S. Public Health Service, the thirteen Veterans Administration branch offices, the American Trudeau Society (which launched a similar cooperative investigation in November 1946 with streptomycin supplied by the Streptomycin Producers Association), and by numerous consultants, including Drs. H. C. Hinshaw, E. R. Long, M. J. Romansky and G. P. Youmans. The third meeting was held at St. Louis on May 1-3, 1947 under the sponsorship of and attended by the subcommittee on Tuberculosis of the Division of Medical Sciences, National Research Council. It is the intention of the present paper to outline the results which were described at that meeting and the tentative conclusions to which they led.

RESULTS OF INVESTIGATION

1. *Pulmonary.*—Four hundred and thirty-four cases of pulmonary tuberculosis had been treated according to the terms of the protocol in the study units prior to May 1, 1947. Two hundred and forty-five cases had completed the prescribed course of 120 days' treatment, and the radiologic evidence on 157 of these was reviewed at the St. Louis conference by a jury of eight to twelve phthisiologists, not themselves participants in the studies. The jury was shown pretreatment and post-treatment x-ray films and was asked to record on ballots, for analysis by the statistical personnel present, the independent opinions of its members of any changes that might have occurred. While radiologic evidence is the only objective means of demonstrating changes

6. These units were established at Veterans Administration hospitals in Aspinwall, Pa.; Brecksville, Ohio; Castle Point, N. Y.; Dayton, Ohio; Excelsior Springs, Mo.; Legion, Texas; Minneapolis, Minn.; Richmond, Va.; Sampson N. Y.; Van Nuys, Calif.; Walla Walla, Wash.; Waukesha, Wis., and Wood, Wis.

in pulmonary lesions, it is by definition a matter of personal interpretation and, in the present instance, insufficient time and visibility were available to allow a considered reading. The procedure will be repeated. In the meantime the ballots of this jury, and those of a similar jury at a previous meeting, constitute unbiased evidence to supplement the judgment of the investigators in charge of the studies, with which, as a matter of fact, the evidence closely agreed.

It will be recalled that, by terms of the protocol, all lesions were progressive or stationary at the time streptomycin treatment was initiated. According to the jury, little or no effect was demonstrable on the old fibrous or caseating type of lesions. In the case of exudative lesions, on the other hand, 81 per cent of the ballots noted improvement, i. e. the lesions either "disappeared" or became "smaller" or "harder." Fifty per cent of the ballots indicated that, in the light of the jurors' past experience, these changes would "never," "rarely" or only "occasionally" have occurred on bed rest alone within a comparable period of time. Cases of tuberculous pneumonia, treated early and in the precaseating stages of the disease, often showed remarkable resolution. Thin walled and tension cavities were occasionally observed to decrease in size with extraordinary rapidity. The results observed in the Army and Navy series were superior to those in the Veterans Administration, a result presumably due to their better selection of cases or, rather, to the more exudative type of lesion available to them. So much in favor of streptomycin. In its disfavor it must be said that very rarely indeed, in any individual patient, did even all the exudative lesions resolve; that cavity closure was infrequent; that 10 per cent of the ballots noted extension of disease during the latter stages of therapy; that investigators reported relapses to have occurred in 20 per cent of 120 cases observed during one to seven months following completion of therapy.

Certain other estimates of the effectiveness of streptomycin were available. The effect of increased well-being was constantly remarked on and found a more definite expression in measured gains in weight which, while not constant, were usual. They averaged 20 pounds (9 Kg.) in one series of 20 cases and amounted to as much as 50 pounds (23 Kg.). When fever was present, it usually, at least temporarily, disappeared. Sputum and cough uniformly decreased. Abnormally rapid sedimentation rates often decreased. Sputum conversion occurred in 32 per cent of the 162 cases treated for more than sixty days, on which this observation was recorded. There were six deaths in the 434 cases, three following pulmonary hemorrhage, two due to embolism from thrombophlebitis of the lower extremities and one to "myocardial failure."

Consensus: It was the consensus that streptomycin had affected a majority of progressive or stationary exudative pulmonary lesions favorably and that this effect was most manifest within the first sixty to ninety days of treatment. On the other hand, the effect was rarely complete enough to describe as a "cure" and was frequently only suppressive in the sense that relapses occurred when therapy was stopped or even, during the later stages of prolonged therapy, while it was continued. It was agreed that, in the type of exudative lesion under discussion, streptomycin combined with bed rest had proved itself superior to bed rest alone, since improvement occurred only when streptomycin was added to the rest regimen. The study provided no basis for a comparison with collapse measures. There was some feeling that the major place for streptomycin in the treatment of pulmonary tuberculosis might be as an adjunct to other measures, particularly in managing certain acute phases or complications, and as a means of preparing tuberculous patients for surgical procedures. It was generally agreed that streptomycin should not be used in minimal lesions for reasons set forth under the sections of this paper dealing with toxicity and resistance.

2. *Genitourinary.*—Streptomycin had been administered in 41 cases of genitourinary tuberculosis prior to May 1, 1947. Thirteen of these completed 120 days of treatment shortly before that date after being carefully studied, both prior to and during therapy, in one study unit.[7] All patients had multiple lesions of the tract, averaging 3.5 per patient, and all were bacteriologically proved by culture. The majority (9 of 13) showed considerable, though occasionally temporary, improvement in their frequency and dysuria; bladder capacity increased in 10 of 13; cystitis improved on cystoscopy in 11 of 13; the 3 epididymal sinuses that were present healed. Twenty-five of 32 lesions of the posterior urethra, prostate and seminal vesicles improved. There was, however, little change in the intravenous or retrograde pyelogram. Specimens of bladder urine were cultured for tubercle bacilli every fortnight, and specimens of ureteral urine every forty days, during therapy. After the first forty days of treatment, only 4 of the 13 cases continued to have positive cultures and but 2 of these 4 were positive one month after the conclusion of treatment; in both instances the bacilli were resistant to more than 500 micrograms of streptomycin per cubic centimeter.

Consensus: Time alone will tell whether improvement of the lower urinary tract lesions will be maintained. Time alone will tell whether the sterilization of urine which has been secured will be persistent. A larger study and more prolonged observation must precede the formulation of any conclusions.

3. *Bone and Joint.*—Twenty-four cases were under treatment with streptomycin on May 1. The protocol governing the therapy of these lesions permitted diagnosis of tuberculosis of the spine on the basis of long-continued radiologic observation, but pathologic or bacteriologic diagnosis was required for presumed tuberculous disease elsewhere. The results, thus far, have not been promising.

Consensus: Further study is justified. Comment is not justified.

4. *Draining Cutaneous Sinuses and Lymphadenitis.*—Ninety patients with 1 or more sinuses of proved tuberculous origin had received streptomycin prior to May 1. The sinuses were usually multiple and the vast majority originated in lesions of bone, cartilage or lymph node.

The first series of 12 patients to complete treatment in a study unit had a total of 60 sinuses, which had been draining for an average of twenty-four months at the time treatment was started.[8] Fifty-nine of the 60 healed, 30 per cent of them within sixty days and 80 per cent within ninety days. The patients showed an average gain of 15 pounds (6.8 Kg.) in weight.

7. Amberson, J. B., and Schwartz, J. A.: Veterans Administration Hospital, Bronx, N. Y., personal communication to the authors.

8. Brock, B. L.: Veterans Administration Hospital, Oteen, N. C., Streptomycin in the Treatment of Draining Tuberculous Sinuses, J. A. M. A., **135**: 147-149 (Sept. 20) 1947.

Only 1 sinus has reopened in the post-treatment observation period of four to seven months. The investigators found that closure was accelerated if underlying accumulations of pus or necrotic bone were removed surgically. The patients, like all of those described thus far, received 1.8 or 2 Gm. of streptomycin daily by the intramuscular route for 120 days. No local therapy was used.

Subsequent series of cases have responded well but not with as uniform success as did the first group. It is not clear whether this partial failure has been due to a reduction in dosage to 1 Gm. daily—a reduction designed to economize drug and diminish toxicity—or to the fact that the sinuses which failed to close have originated in rather large rigid-walled pockets of pus, e. g. empyemas.

A number of these patients with cutaneous sinuses have also had one or more groups of firm noncaseating lymph nodes. The effects of streptomycin on these nodes has been variable. In some instances a definite and prompt reduction in size has occurred, while in others there has been little or no change. There is no obvious reason for the disparity in these results.

Consensus: The effects of streptomycin therapy on tuberculous sinuses have been strikingly favorable and sufficiently uniform to establish its usefulness.

5. *Tracheobronchial and Laryngeal.*—Eighty-one cases of tuberculous tracheobronchitis and laryngitis had been treated prior to May 1, 1947. In some instances the diagnosis was proved by biopsy, but the finding of a positive sputum in the presence of inflammatory or ulcerative lesions visualized by direct bronchoscopy or laryngoscopy was acceptable evidence under the terms of the protocol governing this study.

Thirteen patients, collected in one unit from many hospitals throughout the West, completed therapy before January 1947 and had been observed for four months subsequent thereto.[9] Frank ulcerations had been repeatedly observed by bronchoscopy in all patients prior to treatment. They received a combination of intramuscular (2.4 Gm. daily) and aerosol (0.5 Gm. daily) therapy. The ulcerations healed with amazing rapidity, some showing improvement within two weeks and all being healed within ninety days. Only one relapse had occurred during post-treatment observation.

After the results of this first series were known, an attempt was made to dissociate the effects of aerosol from intramuscular therapy by employing the routes separately in subsequent series. It seems clear that the aerosol route, employed by itself, is relatively ineffective. This is unfortunate, not only because of the economy of drug which this route would have provided but also because the limited absorption of streptomycin from the tracheobronchial tree appreciably reduces its toxicity. The intramuscular route does not appear to be as effective as combined therapy, but there is insufficient evidence to permit more than a very tentative statement to this effect.

The effect on fibrotic lesions of the tracheobronchial tree has been negligible.

Consensus: There can be no argument as to the effectiveness of streptomycin in healing ulcerative or granulomatous lesions of the tracheobronchial tree or larynx. It should be administered by the intramuscular or by the combined intramuscular-aerosol route.

6. *Alimentary Tract and Peritoneal.*—Eight cases of ulcerative tuberculous lesions of the tongue or tonsils, 8 cases of tuberculous enteritis and 9 cases of tuberculous peritonitis had been treated prior to May 1. Diagnosis in the first group was substantiated by biopsy; in the second group it was made on the basis of radiographic evidence and appropriate clinical symptomatology, often of the greatest severity, in the presence of proved pulmonary tuberculosis; in all but 1 of the third group it was made by biopsy or culture of ascitic fluid.

Five of the cases of glossitis or tonsillitis healed, 2 improved and 1 was unaffected (a terminal case). The ulcer in 1 patient, practically unaffected by aerosol streptomycin, healed when intramuscular streptomycin was employed.

Immediate results in the cases of enteritis were uniform and remarkable. Anorexia, pain and abdominal tenderness disappeared almost entirely within three to ten days of the start of treatment. Diarrhea usually stopped within two weeks, and there was an average gain in weight of 20 pounds (9 Kg.) in the 5 patients on whom this measurement was available. Morphine was discontinued in the 2 patients who had been receiving it. Improvement, though not disappearance, of the lesions was noted by x-ray. Treatment was usually concluded within sixty days. In the 1 patient who received streptomycin by mouth (2 Gm. daily) the result was unsuccessful until intramuscular therapy in the same dosage was initiated.

In 8 of the 9 cases of peritonitis in which intramuscular streptomycin was administered for sixty days, complete relief of symptoms was obtained and such ascitic fluid as was present disappeared. No follow-up biopsies have been obtained.

Consensus: Although these series are, individually and collectively, objectionably small, the results appear sufficiently definite and uniform to permit the conclusion that intramuscular streptomycin is valuable in the treatment of tuberculosis of the alimentary canal and of tuberculous peritonitis. In the presence of continuing pulmonary infection, the permanence of the effects on lesions of the alimentary tract may be suspect, but there is no doubt of the usefulness of streptomycin in providing symptomatic relief; the oral route of administration deserves a further trial in these lesions.

7. *Pericardial, Cutaneous and Ocular.*—Eight cases of pericarditis had been treated prior to May 1, 1947 without beneficial results. In view of McDermott's successful experience[10] with a single case of acute tuberculous pericarditis with effusion, which was treated early in the course of the disease, it may be that these cases were either too far advanced at the time therapy was instituted to make success possible or represented only acute exacerbations of primarily chronic and irreversible pathologic changes.

Experience with cutaneous and ocular tuberculosis has been too meager and inconclusive to warrant discussion.

Consensus: A further trial of streptomycin should be made in patients with early tuberculous pericarditis. Cases of cutaneous and ocular tuberculosis should be searched for, since they provide a tempting opportunity for recording objective results.

9. Brewer, L. A. III and Bogen, E.: Veterans Administration Hospital, San Fernando, Calif., Streptomycin in Tuberculous Tracheobronchitis, Am. Rev. Tuberculosis, to be published.

10. McDermott, W., and Muschenheim, C.: Personal communication to the authors.

8. *Miliary and Meningeal.*—One hundred and eighteen cases of miliary and meningeal tuberculosis had been treated with streptomycin prior to May 1. Bacteriologic proof of the diagnosis was obtained in each instance, patients in whom this proof was not available having been excluded from the series. The miliary tuberculosis was of the acute disseminated type. A majority of the patients received 1.8 Gm. of streptomycin daily by the intramuscular route, but in a number of cases 3 or even 4 Gm. was given for short periods. In addition to this medication the patients with meningeal involvement received from 20 to 200, usually 100, mg. of streptomycin intrathecally either daily or on alternate days. The duration of treatment in those patients who survived had been from 120 to 180 days.

The results of treatment appear in table 2. Sixty-five patients (55 per cent) are dead, 34 having died in the first six weeks and 31 subsequently, after an initial period of decided clinical improvement. Of the 53 patients (45 per cent) who are still alive, all but 3 have survived two months of treatment and 19, having completed treatment, have been observed for from one to six months thereafter.

TABLE 2.—*Miliary and Meningeal Tuberculosis Treated with Streptomycin*

		Dead			Living				
		Following Treatment Days			Following Treatment Days			Treatment Terminated	
Disease	Number of Cases	1-45	46-180	Total	1-60	61-120	121-180		Total
Acute disseminated miliary	27	3	4	7	1	7	3	9	20
Combined miliary and meningeal	40	15	14	29	0	6	1	4	11
Meningeal.....	51	16	13	29	2	12	2	6	22
Total number....	118	34	31	65	3	25	6	19	53
Per cent.....	100	28.9	26.2	55.1	2..	21.2	5.1	16.2	44.9

In miliary disease a considerable majority of the cases not only showed rather prompt defervescence but, in the course of sixty to ninety days, a complete radiologic clearing of the pulmonary lesions. There have been, thus far, only seven deaths in this series of 27 cases. In the cases initially diagnosed and treated as miliary tuberculosis, the complication most to be feared proved to be the development of meningitis during treatment or even after its completion.

Thirty-three of the 91 patients with meningeal involvement are still alive and have considerably exceeded, according to past experience, their life expectancy. Only 10 of the 33, however, have completed treatment and are free from bacteriologic and clinical evidence of active central nervous system infection;[11] only 1 of them has an entirely normal spinal fluid. It is quite possible that these 10 patients will suffer a relapse, and their ultimate survival may be considered dubious.

Consensus: The unprecedented resolution of pulmonary miliary lesions and the immediate dramatic clinical response of patients with meningitis make the treatment of these two types of disseminated tuberculosis by streptomycin mandatory and provide incontrovertible evidence of the chemotherapeutic activity of streptomycin against the tubercle bacillus. It is believed that the mortality rate of acute miliary tuberculosis will be definitely lowered. It is doubted that the eventual mortality rate of meningitis will be appreciably reduced.

9. *Thoracic Surgery.*—The effectiveness of streptomycin in preventing the extension of pulmonary disease incident to thoracoplasties, pneumonectomies, lobectomies and decortications is being investigated in seventeen study units. According to the terms of the protocol governing this experiment, every alternate patient subjected to one or more stages of a thoracoplasty, and all patients subjected to the other operations, received 2 Gm. of streptomycin for one week prior to each operation and for two weeks subsequent thereto. In the case of multiple stage thoracoplasties this provided for long, and often continuous, treatment. The hospitals selected for this study were chosen on the basis of the competence of their surgical staffs, and it was agreed that the indications for operation would not be changed from those which had been previously observed by the surgeons concerned.

Eighty patients had been subjected to one or more stages of thoracoplasty and 24 to pulmonary excisions under this regimen prior to May 1. There had been no pulmonary spreads in either series during observation periods of from one to six months but, since only two spreads had occurred in the thoracoplasty control group, this result is without significance.

Consensus: A very much larger series, totaling at least several hundred cases, will be necessary to prove the worth of streptomycin given in this fashion to prevent the spread of disease. Indeed, should the incidence of spreads be as low in the untreated controls as these preliminary results indicate, the prophylactic treatment of all thoracoplasties would appear to involve a great waste of streptomycin. It may prove advisable to avoid prophylactic treatment and to confine use of the drug to cases in which spreads have actually occurred.

DISADVANTAGES OF STREPTOMYCIN THERAPY

1. *Toxicity.*—(*a*) If streptomycin had preceded penicillin in the field of chemotherapy it would have been considered an extraordinarily nontoxic drug. It appeared to be entirely safe when it was administered for brief periods of time in the treatment of acute infections. But used in the dosage, and for the prolonged periods, that seemed necessary in the treatment of such an exquisitely chronic disease as tuberculosis, this proved not to be the case. No deaths have occurred in this series in which streptomycin could be accused of having played more than a minor contributing role, but toxic manifestations of sufficient severity to require the cessation of therapy have occurred in 49, or 6 per cent,[12] of patients. On this account it was the consensus that streptomycin should not be administered to tuberculous patients unless they were hospitalized and the facilities of a good laboratory were available to them.

(*b*) Contact Dermatitis: A disadvantage of streptomycin though, to be sure, to the medical staff rather than the patient, lies in its production of a contact dermatitis which has been reported from the several units in more than a dozen instances. Developing in individuals who administer streptomycin, these cases

11. As of July 15, 1947 8 more of the surviving 33 patients fall in this category and none have died.

12. Patients with miliary tuberculosis and tuberculous meningitis have been excluded from this calculation, partly because the incidence of complications appears to be higher in this group, and partly because there is difficulty in distinguishing the toxic manifestations of streptomycin from the pathologic manifestations.

have usually affected the hands but, by misadventure also have involved the face and conjunctiva. They have been sufficiently severe to induce the suggestion that all persons who habitually handle streptomycin should wear gloves.

(*c*) Local Irritation: The irritant effect of the intramuscular injection of streptomycin is of concern to the doctor only because it is of concern to the patient. The effect is somewhat less, though by no means absent, with the purer preparations now in use. The addition of procaine to the injected fluid is of some assistance.

The long-continued daily intrathecal injection of 100 or 200 mg. of streptomycin not only produced an apparent increase in the cell count and protein concentration of cerebrospinal fluid but also resulted in definite attacks of pain radiating along the distribution of the sciatic nerve in a considerable number of patients. Temporary partial paraplegia with paresthesia occurred in 3 cases (3.3 per cent). With the injection of larger amounts the latter effects were more frequent. On this account it was decided at the St. Louis Conference that single intrathecal injections should not exceed 1 mg. per kilogram of body weight.

(*d*) Minor Toxic Reactions: Fever was a rare complication of treatment but did occur. Circumoral paresthesia was commonly observed but was considered unimportant. Nausea and vomiting occurred occasionally and have been sufficiently severe so that it has seemed necessary to interrupt, though not to abandon, treatment in a few cases.

(*e*) Jaundice, Psychosis and Blood Dyscrasias: Two instances of jaundice and 1 of toxic psychosis developed during streptomycin therapy, but the connection with treatment may have been fortuitous. Sulfobromophthalein tests, performed at the conclusion of treatment in 250 patients, have revealed no abnormality of hepatic function. On the other hand, 8 instances (0.98 per cent) of blood dyscrasias appeared during treatment and, though 5 of these consisted of a relatively mild leukopenia with neutropenia, there have been 3 instances of agranulocytosis quite definitely due to streptomycin. Although 1 of these patients had generalized miliary tuberculosis, cessation of streptomycin was followed by a return to normal of bone marrow function despite progression of the disease.

(*f*) Sensitivity Reaction: Some degree of eosinophilia was observed early in the course of treatment and often persisted intermittently until treatment was stopped. It was commonly of the order of 10 to 20 per cent and, in 1 instance, reached 71 per cent for a brief period. It is not of itself an indication for discontinuing streptomycin. A pruritic, erythematous, maculopapular skin eruption, at first localized, appeared in a considerable percentage of cases after about ten days of treatment. The pruritus was usually relieved by "benadryl." Treatment need not be stopped because of the rash unless it develops into a generalized exfoliative dermatitis, whereupon it constitutes an indication for immediate cessation of therapy; 7 such cases (0.80 per cent) occurred in the present series.

(*g*) Renal Damage: The periodic discovery of casts (particularly in an acid urine) and albumin in the urine of patients receiving streptomycin was almost routine, although they might have been absent during the control period. Although indicative of some renal irritation by streptomycin, this has not been regarded as a contraindication to continued treatment. Occasionally, and especially in the presence of preexisting renal dysfunction, blood chemistry determinations reveal definite indications of increasing renal insufficiency and the administration of streptomycin has to be stopped. This was the case in 17 instances (2.1 per cent) of the present series. As a consequence of the decreased streptomycin excretion which accompanies renal failure, abnormally and, it is believed, dangerously high plasma concentrations of streptomycin occur. It is under these circumstances of renal disease that measurement of the streptomycin concentration of blood serum is of special importance.

(*h*) Damage to Eighth Cranial Nerve: The most important and commonest toxic reaction encountered with streptomycin therapy was an extraordinary and specific interference with vestibular function. Preliminary evidence suggests that this dysfunction is due to damage to the central nervous system nuclei of the eighth cranial nerve. Vertigo appeared in 96 per cent of the patients in this series. The time of its appearance is a function of dosage and presumably, therefore, of blood concentration. Under the regimen of 1.8 or 2.0 Gm. per day, it usually appeared in the fourth week of treatment. It varied in degree from an occasional mild sensation of dizziness to an extreme vertigo which incapacitated the patient for all movement. It was accompanied with a definite diminution in the response of the internal ear to caloric stimulation. It has not, in this series, been regarded as an indication to stop therapy. As time went on and treatment was continued, the vertigo lessened and usually disappeared. Hypofunction or afunction of the labyrinth, as determined by caloric tests, however, persisted for at least a matter of months after treatment was concluded and may prove to persist permanently. The patient employed his other senses to accommodate for this loss of vestibular function, but some difficulty in locomotion, particularly in the dark, persisted. This ability to compensate was conspicuously less in older persons. How serious an economic or social disability this neurologic defect imposes is a matter for present dispute and future determination. In the opinion of Hinshaw,[13] who has had the longest experience with this situation, the great majority of patients will suffer no permanent inconvenience. It does, however, argue against the use of streptomycin in minimal pulmonary tuberculosis or in any situation in which this hazard of treatment exceeds that of the disease.

The auditory branch of the eighth cranial nerve may also be affected. This effect is very much less common. When a constant and increasing loss in hearing is detected by audiometer, streptomycin therapy should be stopped unless the patient accepts the risk of deafness, for the defect is progressive and, when complete, presumably permanent. Sufficient loss of hearing developed in 9 cases (1.1 per cent) of the present series to make cessation of treatment seem wise to the investigator; with this cessation, hearing returned toward normal.

2. *The Development of In Vitro Resistance to Streptomycin by the Tubercle Bacillus.*—Although it is hoped that data on in vitro resistance will eventually be available from the entire series, the difficulties both of culture and of sensitivity determinations are such that they are still rather fragmentary. Nevertheless they are sufficient to provide general support

13. Hinshaw, H. C.: Personal communication to the authors.

for the evidence already adduced.[14] One hundred and thirty-two strains of tubercle bacilli isolated from the sputum or urine of patients prior to streptomycin therapy have all been sensitive to a concentration of 3 micrograms of streptomycin per cubic centimeter in vitro, and the vast majority of them have been sensitive to 1 microgram or less per cubic centimeter. Since the concentration of streptomycin in the circulating blood plasma does not fall below 5 micrograms per cubic centimeter with the dosage regimen which has been used in this series, and since its concentration in the drainage from tuberculous cavities, in pleural effusions and in the bronchial secretions is more than half that in blood plasma,[15] a therapeutically effective concentration is present at the beginning of treatment. As treatment continues, however, the bacilli in a considerable proportion of cases become resistant in vitro to much higher concentrations of streptomycin than could be achieved in the body fluids by therapeutically practicable doses and, presumably, when this situation develops the continuation of treatment is useless. This statement has been necessarily couched in vague terms, for the time of onset of this in vitro resistance, its incidence, and positive assurance that it represents in vivo resistance, have yet to be accurately defined.

According to McDermott and Muschenheim[10] resistance has been observed as early as the thirty-fifth day, and tubercle bacilli from 19 of 20 patients with pulmonary tuberculosis grew freely in a modified Dubos medium in the presence of 500 micrograms of streptomycin per cubic centimeter after ninety to one hundred days of treatment. Data gathered from six units in the present study indicate that resistance to more than 20 micrograms, and usually to more than 100 micrograms, per cubic centimeter developed in 39 of 62 patients (63 per cent) in sixty to 120 days, a finding quite consistent with the evidence just cited. Data from the seventh unit (Fitzsimons), in whose laboratory both Youmans and Dubos mediums were used for the sensitivity determinations, disclosed that bacilli from 11 of 20 patients were resistant to from 10 to 1,000 micrograms in 120 days on Youmans medium but only 4 (20 per cent) of the same strains were resistant to similar concentrations on Dubos medium. The reason for this discrepancy between the results obtained with the two mediums at Fitzsimons, and for the apparent conflict between the results obtained by McDermott and the Fitzsimons investigators using Dubos medium, may lie in the presence of a higher concentration of one of the constituents ("Tween 80") of Dubos medium in the Fitzsimons experiment, since this substance has proved to have some bacteriostatic action in its own right. The point is being further investigated in several laboratories cooperating in the American Trudeau Society study.

At the moment, therefore, one can scarcely say more than that strains of tubercle bacilli resistant to streptomycin probably appear in at least two thirds of patients after less than 120 days of treatment. It is certainly reasonable to believe that when the bacilli develop this resistance in vitro they will no longer respond to streptomycin therapy in vivo. It is consistent with this belief that resistant bacilli have been found in a few patients who have suffered an extension of their disease during the later phases of treatment and in an additional few who have failed to respond favorably to a second course of streptomycin therapy. But it will take considerably more evidence before a positive statement can be made to this effect.

14. Youmans, G. P.; Willeston, E. H.; Feldman, W. H., and Hinshaw, H. C.: Increase in Resistance of Tubercle Bacilli to Streptomycin: A Preliminary Report, Proc. Staff Meet., Mayo Clin. **21**: 126-127, 1946. Middlebrook, G., and Vegian, D.: Certain Effects of Streptomycin on Mycobacteria in Vitro, Am. Rev. Tuberc. **54**: 553-558, 1946. McDermott and Muschenheim.[10]

15. Steenken, W.; D'Esopo, N., and Wolinsky, E.: Excretion of Streptomycin into Tuberculous Cavities, the Pleural Space and the Tracheobronchial Tree, Am. Rev. Tuberculosis, to be published.

SUMMARY

Twenty-two hospitals in the Veterans Administration, the Army and the Navy have cooperated in conducting this clinical investigation into the effects of streptomycin on tuberculosis. Uniform protocols for the several types of disease were adopted and followed. All cases were selected by common criteria, were treated with identical regimens, were observed in the same details. Very large masses of clinical material are essential for the investigation of a disease as protean and as unpredictable as tuberculosis. They are available, and are only available, to such a cooperative investigation as this.

The results which have been summarized here permit but tentative conclusions in most respects. Many patients are still under treatment. At least 1,200 more will be studied in the next twelve months. The position of streptomycin should be much clearer at the end of that time. But it is already somewhat clarified. The findings of Hinshaw and his several collaborators have been confirmed. Streptomycin is a useful adjunct in the treatment of tuberculosis.[16] Indeed, this is an understatement in the case of tuberculous meningitis, miliary tuberculosis, tuberculous sinuses and tuberculous ulcerations of the tracheobronchial tree, for an occasional patient with meningitis has survived, a high percentage of the pulmonary miliary lesions have cleared, and nearly all the sinuses and ulcers have healed. It may well be an overstatement in tuberculosis of the genitourinary tract or of bone and joint; in the former instance we have little knowledge though more hope; in the latter instance we have little knowledge and less hope. In the case of pulmonary tuberculosis, which is, after all, the main problem of the disease from a quantitative point of view, the word "adjunct" fits well. Streptomycin does not, of itself, cure either the old fibrocavernous or the more recent exudative lesions. It does not even seem to benefit fibrocavernous disease. It does, however, in conjunction with bed rest, clear a considerable proportion of exudative disease. And in this type of pulmonary disease appears to lie its value, either as an end in itself or as a preliminary to collapse procedures.

Apart from considerations of supply and expense, the two factors which interfere with its general use under the circumstances indicated are its toxicity and the resistance to it which tubercle bacilli develop.

Its toxicity is not to be ignored. Because of one toxic manifestation or another it was necessary to stop treatment in 49 (6.0 per cent) of the present series. This is not serious in itself, and careful clinical and laboratory supervision has prevented any fatalities. But it is distinctly serious that a considerable proportion, and perhaps all, of the patients treated by the present regimen will be left with a residual hypofunctioning labyrinth which may be permanent. This

16. Hinshaw, H. C., Chairman, Annual Report of the Committee on Therapy and the Subcommittee on Streptomycin, American Trudeau Society 1947, Am. Rev. Tuberculosis.

may or may not be disabling. It is certainly not to be taken lightly. It certainly means that, for the present, streptomycin should not be used in the treatment of minimal pulmonary tuberculosis or other lesions that may be expected to clear on older and accepted forms of therapy. Whether the several toxic manifestations can be minimized or abolished by diminution in the dosage or in the duration of treatment is still to be determined. Several such changes in regimen are being actively explored both by the federal agencies and by investigators of the American Trudeau Society to illumine this point and to determine, as well, whether one or two injections a day are as effective as the present five or six. There is already some ground for believing that these newer regimens can reduce toxicity. It remains to be seen whether therapeutic efficacy will be similarly reduced or whether an improvement, initiated under streptomycin therapy, may continue after the treatment is stopped.

The development of resistance to streptomycin is most serious, and altogether too little is known of its genesis, its significance, its incidence. There is some evidence that it is due to the survival and multiplication of a small number of inherently resistant organisms rather than being an acquired phenomenon. If this is the case, the discovery of another drug to which these few organisms are sensitive would appear necessary to overcome the phenomenon. If it is not the case, changes in regimen, either in the form of a reduced dosage or, particularly, of less prolonged treatment might help to obviate it. It is absolutely vital to rational therapeusis to determine whether the demonstration of resistance in vitro actually means an equivalent resistance in vivo and therefore that further treatment is useless. If this is not the case, we are being taunted by a bogy. Even if we accept its truth, we are left with the problem of determining its incidence and the time of its appearance. If, in all patients, all bacilli were to become resistant to streptomycin on the sixtieth day of treatment it would be very simple. One would simply stop treatment on the fifty-ninth day. But this is almost certainly not true and, since it is not, one is left with the urgent desire to learn the time at which resistance develops and the ratio of resistant to sensitive organisms in each patient under treatment. There is no method of knowing this now until many weeks after the unblessed event, until the cultures have been grown and the sensitivity determinations made. There is the additional possibility, weighing heavily against the employment of streptomycin in minimal tuberculosis, for example, that this resistance, once developed, will be permanent, not only rendering the patient himself intractable to streptomycin therapy at a later date but rendering all persons to whom he may transmit the disease similarly intractable.

There are thus many problems remaining to be solved and much work to be done. This is as it should be. Perhaps before the work is done another and better antibiotic will be found or the lead provided by Smith [17] of combined streptomycin-sulfone therapy will bear fruit. The slight and not entirely safe crutch provided now by streptomycin to a limited section of the tuberculous may be replaced by a stronger instrument or a new pair of legs for the entire group.

17. Smith, M. I., and McCloskey, W. T.: Chemotherapeutic Action of Streptomycin and P.amin in Experimental Tuberculosis, Pub. Health Rep. 60: 1129-1138, 1945.

ANNUAL REPORT OF THE COMMITTEE ON THERAPY AND THE SUBCOMMITTEE ON STREPTOMYCIN

(Revised Version)

The Committee on Therapy of the American Trudeau Society and its Subcommittee on Streptomycin Therapy has, during the past year, carried out a series of therapeutic trials of streptomycin therapy in tuberculosis. In addition, the committee has had the privilege of reviewing results of therapeutic trials conducted by the U. S. Veterans Administration, the U. S. Army and the U. S. Navy and has reviewed results of work previously undertaken at Cornell University, Mineral Springs Sanatorium and the Mayo Clinic. The committee is collaborating closely with the Committee on Medical Research of the National Tuberculosis Association. The American Trudeau Society has been closely affiliated with the work of the Tuberculosis Study Section of the National Institute of Health of the United States Public Health Service. The following conclusions and recommendations appear to be justified on available evidence in the opinion of the members of the Committee on Therapy and the Subcommittee on Streptomycin Therapy.[1]

1. Intensive parenteral and intrathecal streptomycin therapy is advised for treatment of tuberculous meningitis. Although clinical remissions of varying duration are induced frequently by such treatment, subsequent relapse is likely to occur. Residual neurologic disorders are frequently noted, but complete clinical remission may be anticipated in a sufficient proportion to justify treatment of all patients. Early diagnosis and prompt treatment appear to yield superior results; hence treatment must be instituted frequently before complete bacteriologic data are available.

2. Streptomycin therapy is advised for treatment of acute hematogenous miliary tuberculosis. Prompt treatment is necessary if best results are to be realized. Physicians are warned that nontuberculous pulmonary infiltrations may simulate miliary tuberculosis roentgenographically, and wise clinical judgment is required to identify such lesions. Nevertheless, if treatment of miliary tuberculosis is to be prompt, it may have to be instituted before bacteriologic confirmation of diagnosis is available.

3. Streptomycin therapy is advised for the treatment of more severe cases of tuberculous laryngitis and ulcerating tuberculous lesions of the mucous membranes of the oropharynx. The palliative clinical benefits of such treatment are sufficiently uniform and gratifying to justify trial of treatment even in some instances when the ultimate prognosis of associated pulmonary tuberculosis appears grave. Combined parenteral and topical treatment is suggested at this time, pending more complete information as to the relative merits of these two methods of administration.

4. Streptomycin therapy is advised for treatment of progressive ulcerating tuberculous lesions of the tracheobronchial tree. Streptomycin should not be expected to benefit fibrous strictures of the tracheobronchial passages. Parenteral treatment should be employed in such cases. It is not clear as yet whether results are

1. These statements are not to be construed as official statements of any of the U. S. government agencies named above.

superior when combined aerosol and parenteral treatment is used.

5. Streptomycin therapy is not indicated at this time for treatment of all types of pulmonary tuberculosis. Most suggestive results are noted following treatment of recent but extensive and progressing pulmonary lesions, especially if these are diffuse and finely disseminated in appearance rather than appearing as large, dense and localized shadows in roentgenograms. However, tuberculous pneumonia should be treated with streptomycin. It is not recommended at this time that such lesions be treated unless the physician has reason to believe that conventional therapeutic methods will not suffice to control the disease.

Streptomycin cannot be recommended at this time for treatment of (*a*) chronic fibroid or fibrocaseous pulmonary tuberculosis, (*b*) acute destructive and apparently terminal types of pulmonary tuberculosis, (*c*) minimal or early moderately advanced pulmonary tuberculosis with favorable prognosis. These recommendations may be modified by subsequent experience, especially if the toxic effects of the drug enumerated in paragraph 10 are found to be avoidable. It is important that tuberculosis with favorable prognosis be not treated with streptomycin until the full significance of toxicity and drug fastness is better known or means of avoiding them are found.

It is urged that more extensive and more adequately controlled studies be carried out to determine the possibilities and limitations of streptomycin therapy in pulmonary tuberculosis.

6. Streptomycin therapy is suggested for further trial as a remedy for the symptoms of acute ulcerative tuberculous enteritis. Further experience will be required to define more clearly the eventual results of streptomycin treatment in this disease.

7. Streptomycin is recommended for treatment of tuberculous draining cutaneous sinuses and appears to be highly effective in a large majority of cases, regardless of the underlying disease, except that sinuses associated with tuberculous empyema are less likely to respond to treatment.

8. Streptomycin is not recommended for treatment of chronic empyema of tuberculous origin because of its apparent ineffectiveness in studies thus far reported.

9. More extensive observations will be required to learn whether streptomycin is of sufficient value to justify its use in (*a*) prophylactic treatment before and after surgical procedures, (*b*) treatment of tuberculosis of the genitourinary tract, (*c*) treatment of tuberculosis of the bones and joints, (*d*) treatment of tuberculosis of the skin, (*e*) treatment of tuberculous lymphadenitis without sinus formation, (*f*) treatment of ocular tuberculosis.

10. Streptomycin, like many other useful drugs, has definite toxic potentialities. Some of these are unique and incompletely understood at the present time. The reactions listed must be kept in mind whenever streptomycin treatment is contemplated and compared with the hazards of the disease which is being treated.

(*a*) A disturbance of vestibular function will be observed frequently, especially following prolonged treatment with larger doses. Partial or complete compensation is frequently noted especially in younger persons, but the potentialities of this disorder must not be underestimated by the physician. It has not been determined if this disadvantage to streptomycin therapy can be overcome.

(*b*) Deafness may be produced in very rare instances and only following large doses or when streptomycin excretion is defective. Useful hearing is nearly always regained if treatment be suspended promptly when deafness is noted. Audiometric observations are probably advisable at this time until the conditions under which deafness occurs are better defined.

(*c*) Serious renal damage produced by streptomycin appears to be observed rarely except when there is preexisting renal disease.

(*d*) Cutaneous rashes apparently due to acquired hypersensitivity to streptomycin are occasionally observed and sometimes indicate that treatment should be suspended temporarily. It is usually possible to resume treatment later. Serious exfoliative dermatitis is observed very rarely.

It has not been fully determined what the minimal effective therapeutic dose of streptomycin may be, nor is it known how dosage should be modified to secure optimal results in each of the many different types of tuberculosis. It is suggested that the total parenteral dose in twenty-four hours may be from 1 to 2 Gm. It is not known how frequently intramuscular injections need be made or how long treatment should be continued. The successful results observed have usually been in patients who received injections at intervals of from four to six hours and for from three to four months. Until further studies have been concluded, it cannot be recommended that injections be made less frequently or that treatment be continued for shorter periods of time.

The disappearance of drug sensitive strains of tubercle bacilli and their replacement with strains which are drug resistant appears to offer a serious handicap to prolonged effective streptomycin therapy. It is not known as yet what conditions encourage the appearance of drug resistant organisms, how frequently this phenomenon appears, how to determine drug resistance accurately or how permanent this change in bacterial flora may prove to be.

Streptomycin treatment should be avoided when other treatments are available because to produce a drug resistant strain of tubercle bacilli by such treatment may possibly make this form of treatment ineffective should a more serious type of tuberculosis subsequently develop.

The therapeutic trials which have been carried out by the American Trudeau Society have been made possible by contributions of streptomycin by the following manufacturers and in the following amounts between November 1946 and May 1947:

Merck & Co., Inc.
Chas. Pfizer & Company, Inc.
Abbott Laboratories
The Upjohn Company
Eli Lilly & Company
E. R. Squibb & Sons

The following investigators and their associates have been cooperating in this study:

Dr. J. Burns Amberson, Bellevue Hospital, New York.

Dr. Emil Bogen, Olive View Sanatorium, Olive View, Calif.

Dr. H. Corwin Hinshaw (chairman), Mayo Clinic, Rochester, Minn.

Dr. Kirby Howlett, Laurel Heights Sanatorium, Shelton, Conn., and Yale University.

Dr. Walsh McDermott, New York Hospital, Cornell University, New York.

Dr. E. N. Packard, Trudeau Sanatorium, Trudeau, N. Y.

Dr. H. McLeod Riggins, Lenox Hill Hospital, New York; Biggs Memorial Hospital Ithaca, N. Y.; Mount Morris Hospital, Mount Morris, N. Y.; Homer Folks Hospital, Oneonta, N. Y.; Ray Brook, Saranac, N. Y.

Dr. Stuart Willis, Maybury Sanatorium, Northville, Mich., and North Carolina State Sanatorium, Sanitorium, N. C.

Extensive studies are under way to define further (1) the possible applications of streptomycin therapy in tuberculosis; (2) the optimal methods of using the drug with minimal discomfort and expense; (3) the clinical significance of acquired drug resistance on the part of tubercle bacilli and possible methods of preventing this phenomenon from occurring; (4) the combination of streptomycin with other therapeutic drugs, and (5) the toxicity of streptomycin and possible methods of minimizing these effects.

The development of an effective antibiotic agent against tuberculosis which is not universally applicable will surely complicate the practice of medicine as it relates to tuberculosis. It will be of increasing importance that tuberculosis be treated by physicians whose knowledge of the disease is sufficiently broad to permit them to choose wisely which patients should assume the discomforts, the risks and the expense of utilizing this incompletely explored type of therapy.

Streptomycin alone does not appear to be adequate to arrest those types of pulmonary tuberculosis which are most likely to be treated effectively by major surgical procedures. It is not considered safe to permit streptomycin therapy to substitute for bed rest treatment. It is further recommended that effective streptomycin treatment be followed and supplemented by adequate rest therapy because of the serious risk of exacerbation of the disease process after conclusion of treatment. Such exacerbations may fail to respond to second courses of therapy.

It is emphasized in strongest terms that streptomycin cannot be regarded at this time as a satisfactory substitute for therapeutic methods which are already known to be effective for pulmonary tuberculosis. Hope is entertained that it may be a valuable supplement to such methods of treatment. The need for continued research is most urgent.

The Subcommittee on Thoracic Surgery under the chairmanship of Dr. Richard Meade has undertaken a survey to evaluate (1) pulmonary resection for tuberculosis and (2) extrapleural pneumonolysis. Data are being collected on an extensive scale and when compiled should yield very helpful information to the members of the Trudeau Society.

The Committee on Therapy is also proposing to next year's committee that a follow-up study of pneumoperitoneum be undertaken for comparison with that previously accomplished in 1944. It will be of particular interest to determine, if possible, whether the widely circularized questionnaire prepared by this committee in 1944 is in any way responsible for the vastly increased interest in pneumoperitoneum at present.

It is also proposed that the question of BCG vaccination should be assigned by the Council to some committee, possibly the Committee on Therapy, which might serve as an authoritative group for the collection and the evaluation of data which might subsequently be distributed to members of the society.

H. CORWIN HINSHAW, Chairman.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

ESTROGENIC SUBSTANCES (Water Insoluble) (See New and Nonofficial Remedies, 1947, p. 343).

The following dosage form has been accepted:

LINCOLN LABORATORIES, INC., DECATUR, ILL.

Aqueous Suspension of Estrogenic Substances: 1 cc. ampuls containing 10,000 or 20,000 international units per cubic centimeter, 5 cc. vials containing 50,000 international units per cubic centimeter and 15 cc. vials containing 10,000 or 20,000 international units per cubic centimeter. Estrogenic substances (water insoluble) is suspended in isotonic sodium chloride solution containing 2 per cent benzyl alcohol as a local anesthetic with 0.1 per cent pectin and 0.05 per cent sodium oleate as suspending agents. Phenol 0.5 per cent is added as a preservative.

CHORIONIC GONADOTROPIN (See New and Nonofficial Remedies, 1947, p. 374.

The following additional product has been accepted:

LAKESIDE LABORATORIES, INC., MILWAUKEE

Chorionic Gonadotropin: Bulk ampuls containing 2,000,000 and 5,000,000 international units.

Manufactured by license under U. S. patent 1,910,298.

DIGITOXIN (See New and Nonofficial Remedies, 1947, p. 248, under Digitaline Nativelle).

The following dosage form has been accepted:

THE WM. S. MERRELL CO., CINCINNATI

Tablets Unidigin: 0.2 mg., digitoxin, U. S. P.

PYRIDOXINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1947, p. 516).

The following dosage form has been accepted:

BREWER & CO., INC., WORCESTER, MASS.

Sterile Solution Pyridoxine Hydrochloride, 50 mg. per cc.: 10 cc. vials.

PENICILLIN (See New and Nonofficial Remedies, 1947, p. 144).

The following dosage forms have been accepted:

COMMERCIAL SOLVENTS CORP., NEW YORK

Crystalline Penicillin G Potassium: 100,000, 200,000 and 500,000 units.

Crystalline Penicillin G Sodium: 1,000,000 units in 50 cc. vials.

THIOURACIL (See THE JOURNAL, March 1, 1947, p. 619).

The following dosage form has been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Tablets Thiouracil: 0.1 Gm.

PENICILLIN IN OIL AND WAX (New and Nonofficial Remedies, 1947, p. 144).

The following dosage forms have been accepted:

COMMERCIAL SOLVENTS CORP., NEW YORK

Crystalline Penicillin G Potassium in Oil and Wax: 10 cc. and 20 cc. vials. Each cubic centimeter contains 300,000 units. Potassium penicillin suspended in peanut oil containing 4.8 per cent (W/V) white wax, U. S. P.

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Crystalline Penicillin G Potassium in Oil and Wax: 300,000 units per cubic centimeter in 1 cc. cartridges with B-D [1] Disposable Cartridge Syringe. Potassium Penicillin suspended in peanut oil containing 4.8 per cent (W/V) white wax, U. S. P.

1. Trademark registered, Becton, Dickinson & Co.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1946, p. 618).

The following additional dosage form has been accepted:

WALKER VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

Solution Thiamine Hydrochloride, 50 mg. per cc.: 10 cc. vials. Each cubic centimeter contains thiamine hydrochloride 50 mg. in isotonic solution of sodium chloride, preserved with benzyl alcohol 1 per cent.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - CHICAGO 10, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, NOVEMBER 8, 1947

NUTRITION IN RELATION TO CANCER

In his introduction to a recent Conference on Nutrition in Relation to Cancer, Charles Glen King [1] points out that definite gains have been made, although progress in the study of cancer may appear discouraging. Among these gains are stressed: 1. The establishment of the existence of a variety of definite, pure compounds that apparently initiate carcinogenesis and make it possible to project a research program on a molecular basis. Whether or not these compounds are similar to the common causative agents in human cancer is not known. 2. Several substances characteristic of natural diets can, under controlled conditions with animals, decide the issue of whether or not tumors will develop. Results with choline in the feeding of rats illustrate this strikingly. 3. Caloric intake, percentage and composition of ingested fat and certain members of the vitamin B complex, especially riboflavin and the more complex agents that can be transmitted in milk, can influence carcinogenesis. Important also is the use of tracer elements to explore what happens inside normal and cancerous cells.

Tannenbaum cites the fact that caloric restriction inhibits the genesis or incidence of all types of mouse tumors that have been studied. The inhibitory effect is dependent on the degree of caloric restriction, the type of tumor and the dosage or potency of the carcinogen. Probably the main influence occurs during development of the tumor rather than during the preparatory stage. The evidence, however, does not suggest at present that caloric restriction may be used to affect the growth of tumors.

The production of tumors of the liver in rats by the administration of carcinogenic azo dyes is unique in the field of chemical carcinogenesis, as pointed out in a paper by Kensler.[2] The diets used strikingly influenced the incidence of tumor. The nature of this dietary effect, whether attributed to altered metabolic rate or metabolic pathway of the carcinoma, to changed ability of the cell to resynthesize one or more damaged components or to other factors, is still unknown. The protective effect of liver and yeast supplements to the basic brown rice ration fed to the mice suggested the involvement of vitamins of the B complex in this process. Kensler remarks that the evidence available at this time neither proves nor disproves the hypothesis that the azo dyes and possibly other carcinogens damage cells and produce tumors because the tissue affected continuously converts the original compound into metabolites which will inactivate certain cellular enzymes, thus producing an induced, or conditioned, deficiency of this component. The recent successes by Webster and his associates and by Engel in producing tumors of the liver in rats by means of diet alone, a chronic choline deficiency, further emphasize the possibility that chemical carcinogens act by producing a local induced deficiency of the proper intensity and duration.

Engel and his associates [3] state that hepatic cirrhosis may be produced in experimental animals by a deficiency of choline. The importance of this observation is indicated by the common association of hepatic cirrhosis and primary cancer of the liver in man. The authors fed choline-deficient diets of different composition from those previously used in their laboratory to rats for prolonged periods. Neoplasms of one or more types were observed in 14 of 18 rats fed these diets for five to eleven months. Neoplasms were not observed in control animals fed the same diets supplemented with 0.2 Gm. choline chloride.

Among other interesting papers, William J. Robbins discusses contributions to the cancer problem from the study of plants. The pleomorphic variant described by him presents some interesting analogies with the behavior of neoplasms in tissues. Chemically induced mutations and their bearing on carcinogenesis are discussed by Tatum.

The papers presented at the conference reflect both the difficulties inherent in cancer research and the complexity of attack.

MUTATION AS A CAUSE OF DISEASE

Soon after de Vries advanced the concept of mutation in plants, that is, permanent, transmissible change in the offspring, the question naturally arose whether mutation occurs also in man. While a few students of heredity have maintained that hereditary diseases and certain congenital anomalies and malformations in man not infrequently may arise from mutation, although unable to present any indisputable evidence in proof of their hypothesis, until recently the prevailing view has been that mutation as a direct cause of disease is

1. King, C. G.: Introduction to the Conference, Ann. New York Acad. Sc. **44**: 3 (Sept. 7) 1947.

2. Kensler, C. J.: Effect of Diet on Production of Liver Tumors in the Rat by N,N-Dimethyl-p-Aminoazobenzene, Ann. New York Acad. Sc. **44**: 29 (Sept. 7) 1947.

3. Engel, R. W.; Copeland, D. H., and Salmon, W. D.: Carcinogenic Effects Associated with Diets Deficient in Choline and Related Nutrients, Ann. New York Acad. Sc. **44**: 49 (Sept. 7) 1947.

extremely rare and of little practical significance. Now it has been demonstrated that mutation can be produced experimentally. Since observational data are limited to relatively few generations and since human cross breeding experiments may not be performed, we shall never be able to demonstrate with certainty that a hereditary human disease arises from mutation. Kemp [1] has reviewed the conditions which are reasonably assumed to have arisen by mutation and for which the mutation rates have been calculated.

In relation to human disease gametic mutation is of greater importance than somatic mutation because it is transmitted through reproduction of the species from one generation to another. Actually, little is known about somatic mutation although the theory has been advanced that cancer may arise from somatic mutation in a single cell, which then, through propagation by division, gradually forms the tumor tissue. It is believed that 92 to 95 per cent of gametic mutations are recessive, although any given hereditary disease may be recessive, dominant or intermediate depending on the length of time that has passed since the disease-inducing gene arose through mutation, the younger ones being recessive and the older ones tending more to be dominant.

Among the conditions believed to occur not infrequently as recessive mutations are hereditary dwarfism, hereditary deaf-mutism, Friedreich's ataxia, amaurotic idiocy, hemophilia and color blindness, the last two being sex linked. Among the dominant mutations are brachyphalangia, hereditary keratosis, hemeralopia, Huntington's chorea, hereditary hemolytic jaundice, cerebellar and retinal angiomatosis, chondrodystrophy, mongolian idiocy, Leber's optic atrophy and epiloia, or tuberous sclerosis. Sickle cell anemia, not discussed by Kemp, is also believed to have arisen by mutation. Whether or not this condition is recessive or dominant is a matter of dispute. The hereditary mechanism of a number of other diseases is described by Neel in a discussion of carriers of inheritable diseases.[2]

On the basis of the frequency of a dominant or recessive disease in the population and the fertility of the respective patients, it is possible to calculate the mutation rate for the disease, provided the frequency of the disease is constant from one generation to another. For the diseases in which these factors can be estimated with a fair degree of accuracy, the rates have been determined to fall between $1:10^{-4}$ and $1:10^{-5}$.

One of the most important tasks of medical genetics in the future will be to investigate further the significance of mutation as a cause of disease. Though a difficult problem, it can be solved only if we have a thorough knowledge of the frequency of the diseases, their inheritance and the effective fertility of the patients suffering from them. Kemp recommends the establishment of special institutions to work on this problem.

1. Kemp, Tage: Mutation as a Cause of Disease, Acta. path. et microbiol. Scandinav., Supp. **54**: 195, 1944.
2. Neel, James V.: The Clinical Detection of the Genetic Carriers of Inherited Disease, Medicine **26**: 115 (May) 1947.

AGNOGENIC MYELOID METAPLASIA OF THE SPLEEN

In 1908 Donhauser [1] reported the occurrence in a man aged 58 of a greatly enlarged spleen attended by secondary anemia. At necropsy, in addition to myeloid metaplasia of the spleen, the bone marrow was sclerotic. Except for the fact that neither abnormal white cells nor nucleated red cells were present in the blood stream, Donhauser's case is a replica of the disease which has since been described by the Italians as "erythremic myelosis" and in this country as "agnogenic myeloid metaplasia of the spleen" by Jackson, Parker and Lemon.[2] Clinically the condition is characterized by weakness, joint pains, epistaxis and loss of weight, occasionally by jaundice, by slowly progressive enlargement of the spleen and by immature red and white cells in the blood stream.

It is generally agreed that agnogenic myeloid metaplasia of the spleen is an entity, although there are two views concerning its nature. According to one view it is a variant of myeloid leukemia or aleukemic myelosis.[3] However, there are those who believe that in myeloid leukemia nucleated red cells are not constantly present in the blood but occur only in comparatively rare instances. Except in cases of myeloid leukemia in which immature red cells originate in extramedullary foci of hemopoiesis, they are not an integrant of the leukemic process but of the superimposed secondary anemia. In agnogenic myeloid metaplasia of the spleen it is generally believed that, irrespective of secondary anemia, nucleated red cells are constant both in the spleen and in the blood. Because of this difference some hematologists hold that myeloid leukemia and agnogenic myeloid metaplasia of the spleen are separate and independent diseases. Others point out that, were it not for the presence of nucleated red cells in the spleen, the changes might be mistaken histologically for those of Hodgkin's disease. In fact, the splenic changes in agnogenic myeloid metaplasia have been called "atypical" Hodgkin's disease. In other instances the disease has been included in the indeterminate category of so-called splenic anemia and, because the patients may be jaundiced, it has been mistaken for acquired hemolytic icterus.

1. Donhauser, J. L.: The Human Spleen as a Hematoplastic Organ, as Exemplified in a Case of Splenomegaly with Sclerosis of the Bone Marrow, J. Exper. Med. **10**: 559, 1908.
2. Jackson, Henry, Jr.; Parker, Frederic, Jr., and Lemon, H. M.: Agnogenic Myeloid Metaplasia of the Spleen: Syndrome Simulating Other More Definite Hematologic Disorders, New England J. Med. **222**: 985 (June 13) 1940.
3. Heller, E. L.; Lewisohn, M. E., and Palin, W. E.: Aleukemic Myelosis: Chronic Nonleukemic Myelosis, Agnogenic Myeloid Metaplasia, Osteosclerosis, Leukoerythroblastic Anemia and Synonymous Designations, Am. J. Path. **23**: 327 (May) 1947.

Some 16 cases of agnogenic myeloid metaplasia of the spleen have been recorded by Jackson, Parker and Lemon,[2] by Reich and Rumsey [4] and by Levinson and Limarzi.[5] Of this number splenectomy was done in 10 without improvement. In 3 of the cases irradiation was carried out, but the results were no less disappointing than in the cases in which splenectomy was done. Treatment by splenectomy or irradiation appears to be not only useless but harmful and definitely contraindicated. The question of the nature of agnogenic myeloid metaplasia of the spleen and its relation to the marrow and other organs invites further study.

Current Comment

THE VETERANS ADMINISTRATION AND RESEARCH IN TUBERCULOSIS

In recent years the prediction has been made repeatedly that antibacterial agents would be found which would have practical application in the treatment of tuberculosis of human beings. Steady progress toward this goal has been recorded each year since 1940, when experimental tuberculosis of guinea pigs was first found to be amenable to drug treatment. Prior to this date many chemical substances had shown antagonistic action on cultures of tubercle bacilli [1] but without clearly demonstrable effects on the disease, tuberculosis. Also prior to 1940, substances derived from cultures of microorganisms, resembling modern antibiotics and antedating penicillin by many years, had been utilized successfully against the tubercle bacillus in cultures.[2] Most recent is streptomycin, an antibiotic not only effective against cultures of Mycobacterium tuberculosis but capable of arresting experimental tuberculosis in guinea pigs and mice. Its toxicity for man is reasonably low, and it is now produced commercially in large quantities. Repeated reports of its efficacy in the treatment of some types of human tuberculosis have appeared in the past two years. These reports are substantially confirmed in this issue of THE JOURNAL (p. 634) on the basis of a larger number of cases than any heretofore assembled. This most significant research was made possible by the cordial and perhaps unprecedented collaboration between the Veterans Administration, the Army, the Navy and civilian consultants. Every citizen should be gratified to hear that the enormous facilities of the medical service of the United States Veterans Administration are being used to accomplish such important medical research. In no other way can the latest medical discoveries be made available to the veterans of the armed forces. Not only do veterans derive benefit directly from good research that is well planned and faithfully executed, but such work is the best possible testimonial to the quality and morale of physicians enlisted in this and the other federal services. Continued progress in research should attract to the federal services other physicians who seek facilities and encouragement to make worth while contributions to medical knowledge and human welfare.

4. Reich, Carl, and Rumsey, William, Jr.: Agnogenic Myeloid Metaplasia of the Spleen, J. A. M. A. **118:** 1200 (April 4) 1942.

5. Levinson, L. A., and Limarzi, L. R.: Agnogenic Myeloid Hyperplasia of Spleen, Am. J. Clin. Path. **17:** 449 (June) 1947.

1. Hart, P. D'Arcy: Chemotherapy of Tuberculosis: Research During the Past One Hundred Years, Brit. M. J. **2:** 805 (Nov. 30) 1946; **2:** 849 (Dec. 7) 1946.

2. Florey, H. W.: Use of Micro-Organisms for Therapeutic Purposes (Lister Memorial Lecture), Brit. M. J. **2:** 635 (Nov. 10) 1945. Waksman, S. A.: Microbial Antagonisms and Antibiotic Substances, New York, The Commonwealth Fund, 1947.

HORMONE METABOLISM IN THE "TARGET" ORGANS

Hormones can presumably act on their "target" organs in either of two ways: catalytically, as an enzyme which is not changed in the course of its action, or as a specific metabolite which enters into a chemical combination in the receptor organ. Evidence seems to indicate that they act chiefly, in the second way, by being consumed in a reaction in the receptor organ. When pituitary thyrotropic hormone is incubated with various tissues, only thyroid, thymus and lymphatic tissues inactivate the hormone; these are also the only tissues which are activated in vivo by the hormone.[1] This inactivation of hormone by the stimulated glands appears to explain the demonstrated presence of thyrotropic hormone in the tissues of myxedematous patients and its absence in the normal and the thyrotoxic person. A similar inactivation of gonadotropic hormone is demonstrated by the comparison of the gonadotropic content of the pituitary in ovariectomized rats with rats in which the ovaries were explanted to the spleen.[2] In both groups of rats the estrogens of the blood were at castrate levels, thus ruling out the effect of estrogens, yet the gonadotropic pituitary hormones were increased in the ovariectomized animals but remained essentially at the normal level in the animals with transplanted ovaries. The difference is attributed to removal of gonadotropic hormone from the circulation by the transplanted ovaries. The experiments minimize the generally held concept that pituitary hormone secretion is controlled by fluctuations in the blood estrogen level and place emphasis on the pituitary as an autonomous master control organ. The estrogenic hormones appear to enter the metabolism of the placenta in a reaction which involves the formation of the glucuronide of the hormone. Ability to form this glucuronide seems to be limited in the monkey to the ovary, although in other species the liver also inactivates the hormone by this reaction.[3] The action of the liver may be considered as a protective mechanism against ingested estrogenic substances. The enzyme glucuronidase, which accomplishes this reaction, is present in increased amounts also in cancerous tissues.[4] Its presence in these tissues appears again to implicate the sex hormones or a similar compound in the development of these malignant growths. Continued progress will probably be made in the differentiation of the exact chemical reactions by which hormones control the activity of their target organs.

1. Rawson, R. W.; Sterne, G. D., and Aub, J. C.: Endocrinology **30:** 240, 1942.

2. Junck, E. C.; Heller, C. G., and Nelson, W. O.: Proc. Soc. Exper. Biol. & Med. **65:** 148, 1947.

3. Hooker, C. W.; Drill, V. A., and Pfeiffer, C. A.: Proc. Soc. Exper. Biol. & Med. **65:** 192, 1947.

4. Fishman, W., and Analyan, A. J.: J. Biol. Chem. **169:** 449, 1947.

ORGANIZATION SECTION

CLEVELAND INTERIM SESSION

SCIENTIFIC MEETING

Music Hall, Arena Floor, Cleveland Public Auditorium

WEDNESDAY, JANUARY 7, FROM 9 TO 10:30 A. M.

CHARLES H. PHIFER, Chicago, Presiding

SYMPOSIUM ON UTERINE HEMORRHAGE

Bleeding Associated With or Related to Antecedent Pregnancy: (*a*) Causes and Methods of Recognition. DUNCAN E. REID, Boston.
(*b*) Treatment. WILLIAM T. DIECKMANN, Chicago.
Bleeding from the Corpus and Fundus Uteri Not Related to Pregnancy. RICHARD W. TELINDE, Baltimore.
Bleeding from the Cervix Uteri. KARL H. MARTZLOFF, Portland, Ore.

INTERMISSION TO VIEW EXHIBITS—10:30 TO 11 A. M.

11 A. M.

LUKE B. JACKSON, San Antonio, Texas, Presiding

PANEL DISCUSSION ON CARE OF POSTHOSPITALIZED PATIENT WITH CANCER

CHARLES C. LUND, Boston, Moderator

Surgical Care. ALTON OCHSNER, New Orleans.
Medical and Psychiatric Care. WALTER L. PALMER, Chicago.
Roentgenologic Care. EUGENE PENDERGRASS, Philadelphia.
Question and Answer Period.

INTERMISSION FOR LUNCHEON AND TO VIEW EXHIBITS—12:30 TO 1:30 P. M.

1:30 P. M.

STANLEY P. REIMANN, Philadelphia, Presiding

Treatment of the Fat and the Lean. E. H. RYNEARSON, Rochester, Minn.
Carcinoma of the Prostate. C. D. Creevy, Minneapolis.
BCG and Tuberculosis. HERMAN E. HILLEBOE, Albany, N. Y.

INTERMISSION TO VIEW EXHIBITS—3 TO 3:30 P. M.

3:30 P. M.

CHARLES H. PHIFER, Chicago, Presiding

SYMPOSIUM ON THE TREATMENT OF PATHOLOGIC DISTURBANCES OF ADOLESCENCE

Dermatologic Problems. LESTER HOLLANDER, Pittsburgh.
Neurologic and Psychiatric Problems. GEORGE J. MOHR, Chicago.
Endocrinologic Problems: Underweight and Overweight. JOSEPH JOHNSTON, Detroit.

WEDNESDAY, JANUARY 7, AT 8 P. M.

Problems of World Nutrition. CLINTON P. ANDERSON, Secretary of Agriculture.
Presentation of General Practitioner's Medal to Physician Elected to Receive the Award.

THURSDAY, JANUARY 8, FROM 9 TO 10:30 A. M.

LUKE B. JACKSON, San Antonio, Texas, Presiding

SYMPOSIUM ON MULTIPLE INJURIES IN AUTOMOBILE ACCIDENTS

Statistics of Automobile Accidents for 1947 Compiled by the National Safety Council. NED H. DEARBORN, Chicago.
Immediate Treatment at Site of Accident. CARL J. POTTHOFF, Washington, D. C.
Injuries of the Head and Back. DONALD MUNRO, Boston.
Internal Injuries. I. S. RAVDIN, Philadelphia.

INTERMISSION TO VIEW EXHIBITS—10:30 TO 11 A. M.

11 A. M.

HENRY R. VIETS, Boston, Presiding

Tumors of the Neck, Their Diagnosis and Surgical Management. FRANK H. LAHEY, Boston.
Recent Advances in Hematology. CARL V. MOORE, St. Louis.
The Chronic Invalid. EDWARD L. BORTZ, Philadelphia.

INTERMISSION FOR LUNCHEON AND TO VIEW EXHIBITS—12:30 TO 1:30 P. M.

1:30 P. M.

LEONARD W. LARSON, Bismarck, N. D., Presiding

PANEL DISCUSSION ON TREATMENT OF THE AMBULATORY AND HOSPITALIZED DIABETIC PATIENT

ELLIOTT P. JOSLIN, Boston, Moderator

The Unknown Diabetic and How to Recognize Him. RUSSELL M. WILDER, Rochester, Minn.
Medical and Surgical Vascular Complications. LESTER PALMER, Seattle.
Insulin and Diet. HENRY T. RICKETTS, Chicago.
Question and Answer Period.

INTERMISSION TO VIEW EXHIBITS—3 TO 3:30 P. M.

3:30 P. M.

HENRY R. VIETS, Boston, Presiding

Jaundice. ALBERT SNELL, Rochester, Minn.
The Rh Factor. PHILIP LEVINE, Raritan, N. J.
What Can Be Seen in a Roentgenogram of the Chest? LEO G. RIGLER, Minneapolis.

THE SCIENTIFIC EXHIBIT AND THE TECHNICAL EXPOSITION WILL BE OPEN ON MONDAY AND TUESDAY, JANUARY 5 AND 6, 1948, AS WELL AS ON WEDNESDAY AND THURSDAY, JANUARY 7 AND 8, 1948, IN ORDER THAT ALL IN ATTENDANCE MAY HAVE AMPLE OPPORTUNITY TO VIEW THE EXHIBITS.

Official Notes

SCIENTIFIC EXHIBIT AT NAVY PIER

The Scientific Exhibit at the Annual Session of the American Medical Association in Chicago, June 21-25, 1948, will be held on Navy Pier. All the sections of the Scientific Assembly will be represented with groups of exhibits dealing with the various branches of medicine, and each section has elected a representative to the Scientific Exhibit to assist in this activity.

The purpose of the Scientific Exhibit is graduate medical instruction, and there will be teaching exhibits as well as those depicting the results of original investigation. However, all exhibits will be presented for the physician in general practice rather than for the specialist. Awards will be made for the best exhibits, consisting of gold, silver and bronze medals, certificates of merit and honorable mention.

Motion pictures will be shown in theaters arranged for this purpose adjacent to the exhibits. No motion pictures will be allowed in the exhibit booths.

The Scientific Exhibit is organized under a committee of the Board of Trustees, the members for 1948 being Dwight H.

Murray, M.D., Napa, Calif., chairman; E. J. McCormick, M.D., Toledo, Ohio, and James R. Miller, M.D., Hartford, Conn.

Application blanks for exhibit space and for time on the motion picture program are now available. The closing date for applications is Feb. 2, 1948, but prospective exhibitors are urged to submit their applications as far in advance of that date as possible.

Communications and requests for application blanks should be addressed to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10.

INTEGRATION OF THE GENERAL PRACTITIONER IN THE HOSPITAL MEDICAL STAFF ORGANIZATION

HARRY R. MENDELSOHN, M.D.
Cincinnati

Integration of the general practitioner in hospital medical staffs is a problem in institutions whose staffs are controlled by specialists and whose facilities are largely closed to general practitioners and their patients.

The House of Delegates of the American Medical Association in 1946 adopted a resolution encouraging hospitals to establish Sections of General Medicine. Establishment of Sections of General Medicine in hospitals, however, will necessitate changes in existant staff policy with regard to (1) membership, (2) management, (3) professional responsibilities and (4) the educational and research program of the hospital.

Existant hospital medical staff regulations concerning these phases of organization and function are profoundly influenced by policy of the American College of Surgeons and the American Medical Association. This policy is set forth in the "By-Laws, Rules and Regulations for Medical Staffs as Approved by the American College of Surgeons" and the "Essentials of a Registered Hospital" of the American Medical Association.

Responsible groups of general practitioners in various sections of the country urge the American College of Surgeons and the American Medical Association to liberalize their policy where they have not already done so, specifically with regard to the following:

1. *Membership.*—Certification or membership in special societies shall not be a prerequisite to staff membership.

2. *Management.*—Where the right to vote and hold office is a prerogative of only the active staff members, general practitioners shall be eligible for the active staff either as individuals, as a group or as both.

3. *Professional Responsibilities.*—General practitioners shall be assigned professional responsibilities on the basis of individual proficiency, experience and judgment and without reference to certification or membership in special societies.

4. *Educational and Research Program.*—In their educational and research program hospitals shall place emphasis on the training of general practitioners.

The opinion of organized medicine on this subject is already a matter of record. The Joint Committee for the Coordination of Medical Activities[1] in Chicago on April 26, 1947 "expressed concern that the growing tendency to exclude the general practitioner from hospital staff privileges is having the effect of making it impossible for the general practitioner to obtain the advantages of modern hospital facilities for treatment of his patients. The Joint Committee therefore recommended that a long range program be formulated on the part of all professional bodies concerned. The immediate need, the Committee felt, was the integration of general practitioners into hospital staffs throughout the country. To accomplish this the Committee recommended that the Council on Medical Education and Hospitals of the American Medical Association develop, as soon as possible, several alternate plans. The Committee further recommended that the American Medical Association and other professional organizations, as well as the hospital associations in their regional and annual meetings and in their publications, give prominent place to a discussion of how this hospital staff integration can best be accomplished in order to make available for each eligible physician and his patients all the facilities provided in the community for medical care."

A resolution adopted by the House of Delegates of the American Medical Association, San Francisco, 1946, read:

> *Resolved,* That hospitals should be encouraged to establish general practitioner services. Appointments to a general practice section shall be made by the hospital authorities on the merits and training of the physician. Such a general practice section shall not per se prevent approval of a hospital for the training of interns and for residencies.
>
> The criterion of whether a physician may be a member of a hospital staff shall not be dependent on certification by the various specialty boards or membership in special societies.

The report of the Council on Medical Education and Hospitals of the American Medical Association stated:

> . . . it was never intended that staff appointments in hospitals generally, or even in hospitals approved for residencies, should be limited to board-certified physicians as is now the policy in some hospitals. Such policies if practiced extensively are detrimental to the health of the people, and therefore to American medicine. Hospital staff appointments should depend on the qualifications of physicians to render proper care to hospitalized patients as judged by the professional staff of the hospital and not on certification or special society memberships. In this opinion, the Council has the full concurrence of the Advisory Board for Medical Specialties.

A resolution was recently adopted concurrently by the American Board of Surgery and the Advisory Board of Medical Specialties:

> The American Board of Surgery is not concerned with measures that might gain special privileges or recognition for its certificants in the practice of surgery. It is neither the intent nor has it been the purpose of the Board of Surgery to define requirements for membership on the staff of hospitals. The prime object of the Board is to pass judgment on the education and training of broadly competent and responsible surgeons—not who shall or shall not perform surgical operations. The Board specifically disclaims interest in or recognition of differential emoluments that may be based on certification.

Integration of general practitioners in medical staffs does not require radical amendment of existing hospital medical staff organization. The plan herein proposed incorporates changes in policy already endorsed by leaders of organized medicine. In this plan credit for the concept of partition of the active staff into two divisions is due the Bethesda Hospital, Cincinnati, where to my knowledge this concept first originated. A presentation of the duties and responsibilities of specialists is included, since these necessarily relate to the duties and responsibilities of general practitioners. The articles relating to the Specialist Division are drawn verbatim from "Rules, Regulations and By-Laws for Medical Staffs as Approved by the American College of Surgeons," article IV, section 4, "The Active Medical Staff."

Proposed Amendments to the Constitution and By-Laws of an Approved Hospital for Purposes of Integrating the General Practitioner in the Hospital-Medical Staff Organization

(*a*) The Active Medical Staff shall consist of two divisions: (1) the Specialist Division of the Active Medical Staff, and (2) the Nonspecialist Division of the Active Medical Staff.

(*b*) Appointments shall be made annually by the governing board on recommendation of the Active Medical Staff from former members of the Active Medical Staff, and, in so far as it is possible, vacancies shall be filled by promotion of members of the Associate Medical Staff who have signified a desire to become active in the work of the hospital.

(*c*) All business of the medical staff shall be transacted by the Active Medical Staff and only members of the Active Medical Staff shall be eligible to vote and hold office.

Articles Governing the Specialist Division of the Active Medical Staff

(*a*) The Specialist Division of the Active Medical Staff shall consist of physicians who have been selected to attend free patients in the hospital and to whom all such patients shall be assigned. Members of the Specialist Division of the Active Medical Staff shall not be required to be exclusive specialists, but it is to be expected that they will be well skilled in the particular branch of medicine to which they are assigned and that the major part of their private practice will fall within that specialty.

(*b*) The duties of the Specialist Division of the Active Medical Staff shall be to attend all free patients, and, in so far as free work is concerned, they shall attend only such patients as are admitted to their services.

(*c*) In so far as free patients are concerned, members of the Specialist Division of the Active Medical Staff shall treat patients in both the inpatient and outpatient departments, as assigned to the service; and in

1. An advisory committee composed of representatives from Advisory Board of Medical Specialties, American Dental Association, American Hospital Association, American Red Cross, Association of American Medical Colleges, Catholic Hospital Association, American College of Physicians and Surgeons, Federation of State Medical Boards, Federal Security Agency, U. S. Army and Navy and Public Health Service, Veterans Administration and American Medical Association.

the treatment of these they shall have unrestricted privileges and shall treat the patient to a conclusion, whether such treatment is given in the inpatient or outpatient department, or both. In so far as private patients are concerned, they shall have unrestricted privileges in the treatment of patients falling within the specialty to which they are appointed, but in others they shall have only such privileges as may be determined by the Credentials Committee in conformity with articles governing the prerogative of that committee.

Articles Governing the Nonspecialist Division of the Active Medical Staff

(*a*) The Nonspecialist Division of the Active Medical Staff shall consist of general practitioners who do not limit the character of their practice but request the aid of specialists in such matters as exceed the scope of their competence.

(*b*) In the care of private patients they shall have only such privileges as shall be determined for each by the Credentials Committee.

(*c*) They may participate in the care of free patients in the inpatient and outpatient departments of the hospital but shall have limited privileges in the care of such patients.

(*d*) Participation in the care of free patients shall be by virtue of either a dual appointment, i. e. in both the Section of General Medicine and one other department in which specialty the applicant shall have expressed a desire to advance, or through a system of rotating appointments through the various specialty departments.

(*e*) The Nonspecialist Division of the Active Medical Staff shall constitute the Section of General Medicine.

Organization of the Section of General Medicine

Definition of a General Practitioner: A general practitioner shall be defined as a physician who does not limit the character of his practice but who requests consultation in situations beyond the scope of his competence.

Officers: (*a*) Director: There shall be a director appointed annually by the Board of Trustees. The duties of the director shall be to correlate the work of the Section from year to year. He shall have all prerogatives of staff management as have directors of other Sections or Departments.

(*b*) Chairman: The chairman shall be appointed each year by popular vote of the Section. He shall serve for one year and may not be reelected for more than one term. He shall assume the active direction of the functions of the Section, presiding at meetings.

(*c*) Secretary: The secretary shall be appointed for a two year term by popular vote of the Section and may not be reelected for more than one term. He shall keep permanent records of the proceedings of the Section.

Function of the Section of General Medicine

1. The Section of General Medicine shall: (*a*) discuss the deaths of all patients admitted to the hospital by general practitioners; (*b*) discuss cases of unusual interest; (*c*) conduct programs of general scientific interest; (*d*) promote the proper administration of professional services; (*e*) fix more definitely the responsibility of general practitioners in the hospital; (*f*) participate in general medical staff management, and (*g*) participate in the care of indigent patients in the inpatient and outpatient departments of the hospital (under provisions stated in (*c*) of "Articles Governing the Nonspecialist Division of the Active Medical Staff").

2. The Section of General Medicine shall hold regular meetings to accomplish the foregoing.

3. The Section of General Medicine shall not constitute a service for the unrestricted treatment of inpatients in the hospital.

Coming Medical Meetings

American Academy of Allergy, St. Louis, Hotel Jefferson, Dec. 15-17. Dr. Theodore L. Squier, 425 E. Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of Dermatology and Syphilology, Chicago, Palmer House, Dec. 7-11. Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, N. Y., Secretary.

American Academy of Pediatrics, Dallas, Texas, Dec. 8-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association of Railway Surgeons, Chicago, Nov. 23-25. Dr. Raymond B. Kepner, 547 West Jackson Boulevard, Chicago 6, Secretary.

American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, New York, Nov. 13. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.

American Society of Anesthesiologists, New York, Hotel New Yorker, Dec. 4-5. Dr. Curtiss B. Hickcox, 745 Fifth Ave., Room 1503, New York 22, Secretary.

American Society of Tropical Medicine, Atlanta, Ga., Dec. 2-4. Dr. Norman H. Topping, National Institute of Health, Bethesda 14, Md., Secretary.

Association of Military Surgeons of the United States, Boston, Hotel Statler, Nov. 13-15. Col. James M. Phalen, Army Medical Museum, Washington 25, D. C., Secretary.

Post Graduate Medical Assembly of South Texas, Houston, Texas, Coliseum, Dec. 1-3. Dr. E. Trowbridge Wolf, 229 Medical Arts Bldg., Houston, Texas, Secretary.

Puerto Rico, Medical Association of, San Juan, Dec. 10-14. Dr. Jeramfel Cordero, Box 3866, Santurce, Secretary.

Radiological Society of North America, Boston, Nov. 30-Dec. 5. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse 2, N. Y., Secretary.

Seaboard Medical Association of Virginia and North Carolina, Virginia Beach, Va., Dec. 2-5. Dr. Clarence Porter Jones, 3117 West Ave., Newport News, Va., Secretary.

Society of Surgeons of New Jersey, New Brunswick, Nov. 19. Dr. Walter R. Mount, 21 Plymouth St., Montclair, Secretary.

Southern Medical Association, Baltimore, Nov. 24-27. Mr. C. P. Loranz, Empire Bldg., Birmingham 3, Ala., Secretary.

Southern Surgical Association, Hollywood, Fla., Dec. 9-11. Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Western Surgical Association, Colorado Springs, Broadmoor Hotel, Dec. 4-6. Dr. Warren H. Cole, 1853 West Polk St., Chicago 12, Secretary.

Washington Letter

(From a Special Correspondent)

Nov. 6, 1947.

Nurse Shortage Reported to Be on the Wane

Miss Ruth Sleeper, president, National League of Nursing Education, reported that the nationwide enrolment of student nurses this year is expected to reach the peacetime peak of 41,000 established in 1941. She was optimistic over the possibility that the present widespread shortage of nurses would be reduced. Miss Sleeper, Director of Nursing Services and the School of Nursing, Massachusetts General Hospital, said that actually there are now more graduate nurses and students than before the war and the shortage is primarily due to the large increase in the number of patients. Miss Sleeper was one of three hundred delegates to the National Nursing Council conference here. At New York, Miss Alma Vessells, executive secretary, National Association of Colored Graduate Nurses, reported that southern branches of the American Nurses Association is taking steps to remove discriminatory barriers against Negro nurses.

Dr. Parran Reports Venereal Disease Could Be Wiped Out in Nine Days

In an article in the *Women's Home Companion* Surg. Gen. Thomas Parran reported that venereal diseases could be wiped out in the United States in nine days "if every man, woman and child" in the country took penicillin simultaneously on the same day. He advocated a nine day campaign preceded by months of educational and publicity preparation. He proposed that from 6 a. m. to 9 p. m. on a set day every physician's office, hospital, clinic, school, fire house and police station be open to give free penicillin treatment to the population. He estimated that if every physician made a routine blood test on every patient, they would discover 2 cases of syphilis among every 100 patients.

Annual Salary of $15,000 Proposed for All Federal Scientists

The third volume of a five volume survey released by the President's Scientific Research Board headed by presidential assistant John R. Steelman advocates a four point program to improve scientific administration work in government, including a $15,000 salary ceiling for federal scientific workers. The program includes (1) creation of an Interdepartmental Committee on Scientific Research and Development; (2) establishment of a special unit in the Bureau of the Budget to review scientific research and development program; (3) designation of a White House staff member by the President to handle liaison, and (4) establishment of a National Scientific Foundation. Major changes in personnel policies to give federally employed scientists more credit and prestige are proposed.

Plan X-Ray Survey of All Adults

A blueprint for action against tuberculosis was mapped here in plans by the Citizens Committee of the Washington, D. C., Chest X-Ray Survey to have roentgen examinations made of every Washingtonian aged 15 and over next year. William Leahy, chairman, said of his committee: "We have enough workers, enough money and enough equipment to bring the x-ray to people without requiring any one to walk or ride more than five blocks." The survey will begin January 10 when fourteen high speed x-ray machines of the U. S. Public Health Service go into operation.

Backs Hawley for Veterans Administration Chief

The Association of American Medical Colleges, meeting at Sun Valley, Idaho, wired Washington news outlets that it favored appointment of Dr. Paul R. Hawley as chief of the Veterans Administration if Gen. Omar Bradley takes over other duties. General Bradley is expected to succeed General Eisenhower as Army Chief of Staff within the next few months.

GOVERNMENT SERVICES

ARMY

ARMY TO BE VACCINATED AGAINST INFLUENZA

Army personnel will be vaccinated against influenza beginning in October in accordance with Army Circular number 4, dated Sept. 22, 1947; those entering the service prior to April 1, 1948 will receive influenza vaccine with their other initial immunizations. In addition to the A and B viruses the vaccine to be used contains organisms of the A-variant cultured from strain causing the distinctive type of influenza that occurred in Fort Monmouth, N. J., last season. The Army is on the lookout for any other new strains that may be demonstrated this year.

INTERNSHIPS AND RESIDENCIES OFFERED IN 1948

The Army will offer in 1948 two hundred medical internships to be filled by recent graduates. These will be rotating internships for a period of one year, and the interns will receive the pay and allowances of first lieutenants. Applicants must be male graduates from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association and eligible for appointment in the medical officers' reserve corps.

There will also be offered in 1948 three hundred and fifty residencies for periods of one, two and three years depending on the specialty desired and previous experience. Applicants for the residencies must be regular Army medical officers or applicants for the regular Army who are graduates of an approved medical school and who have completed at least one year of rotating internship in an approved hospital. The appointments will be as assistant residents, residents or senior residents, depending on the applicants' professional background.

CLASS IN HOSPITAL ADMINISTRATION

The Army Medical Department began its first class instruction in hospital administration at the Medical Field Service School, Fort Sam Houston, Texas, November 10. Members of the class are officers of the newly organized Medical Service Corps of the regular Army who have completed five years of active commissioned service or members of the Army Nurse Corps who have completed five years of administrative experience as chief nurse or assistant chief nurse in an Army hospital. The purpose of the course is to provide officers qualified for administrative positions within the Army hospital system. The course will be of twelve weeks' duration.

MEETING OF MEDICAL OFFICERS IN KOREA

At the monthly meeting of medical officers in Korea at the 71st Station Hospital, September 24-25, Capt. James W. Nunn read a paper on "Erythema Multiforme Exudativum," which was discussed by Capt. Howard N. Baier. The paper by Capt. Arthur H. Keeney on "Methyl Alcohol Poisoning" was discussed by Major H. V. Ellingson of the 34th General Hospital. Col. Charles P. Ward, surgeon, 24th Corps, presided over the business meeting. Ward rounds, clinics and a social gathering were other features of the meeting, which was attended by about seventy-five medical officers. The next regular meeting was scheduled to be held at the 382d Station Hospital, APO 901, on October 29.

THERAPEUTIC AGENTS BOARD

The Surgeon General's Office has appointed a central therapeutic agents board with a view to standardizing and improving processes and methods used by Army hospitals in applying the principles of theoretical pharmacy. General Armstrong, then acting surgeon general, stated in an address before the American Pharmaceutical Association in Milwaukee that the board would give particular attention toward establishing policies on the supply of nonstandard agents for use in treating patients. Commanding officers of the general hospitals have been directed to appoint therapeutic agents boards to make recommendations relative to the local purchase of nonstandard items including biologicals to be used by the hospitals.

HIGHER GRADES FOR SOME NATIONAL GUARD MEDICAL OFFICERS

The chief of the National Guard Bureau, Washington, D. C., announces that authority has been granted the National Guard to fill vacancies for medical officers by assigning qualified physicians who are one grade higher than is authorized by applicable tables of organization. Medical officers have been reluctant to join the National Guard because they were recently separated from the Army in grades higher than those authorized in tables of organization. At present strength the announcement states there should be about 1,400 doctors commissioned in the National Guard instead of the 318 on the rolls as of Aug. 1, 1947.

The new policy takes effect providing (1) no officer is available in the proper grade or one grade junior to the specified vacancy in question and (2) the officer concerned has held the higher grade while on active duty or by virtue of an Officers Reserve Corps appointment; officers so assigned will be in grades up to and including the grade of colonel; an officer so assigned will be replaced immediately on availability of a qualified officer in the proper grade, or one grade junior to that specified.

Major Gen. Kenneth F. Cramer, chief of the National Guard Bureau, urged all qualified medical officers to take advantage of the new policy because their services are urgently needed, especially during the present recruiting campaign for the National Guard. Enlistments have been delayed because of the lack of medical personnel to make the physical examinations.

INSPECT PROFESSIONAL TRAINING

Nine teams of civilian consultants to the surgeon general, each composed of a surgeon, an internist and a neuropsychiatrist, have been inspecting the professional training program being carried out in Army hospitals. Recently a team comprising Dr. Maurice C. Pincoffs, professor of medicine, University of Maryland; Dr. Michael E. DeBakey, Tulane University Medical School, New Orleans, and Dr. William C. Menninger, Topeka, Kan., inspected the training program at Walter Reed General Hospital.

GENERAL BLISS ON TOUR OF PACIFIC AREA

Major Gen. Raymond W. Bliss, the Surgeon General, has just returned from a tour of medical facilities in the Pacific area. The tour included Guam, Tokyo, Korea, Tsingtao, Shanghai, Okinawa, Kwajalein, Manila and Honolulu. General Bliss was accompanied by his executive officer, Col. Howard W. Doan, M. C.; also in the company were Capt. Maurice E. Browder, U.S.N., and Capt. James E. Hall, U. S. M. C.

HEIDELBERG ORTHOPEDIC CONGRESS

Professor Weil, director, Orthopedic Institute, Heidelberg University, Germany, invited all U. S. Army medical officers in the occupied zone to attend the Orthopedic Congress at Heidelberg, September 3-5. The conference was held in the Surgery Clinic building on Zahnstrasse.

VETERANS ADMINISTRATION

DR. COOK RETURNS TO COLORADO

Dr. Robert C. Cook, deputy medical director for the Veterans Administration, Washington, D. C., who assisted Dr. Paul R. Hawley with the reorganization of medicine in Veterans Administration hospitals, has been assigned at his own request as manager of the VA hospital, Fort Logan, Colo. When he was assigned to the Washington office in January 1946, the understanding was that he would be permitted to return to Colorado. In commenting on the transfer Dr. Hawley, chief medical director, said in part: "I have known for some time that Dr. Cook was anxious to return to his old home in Denver; nevertheless it was with great reluctance that I agreed to his transfer." Dr. Cook is a graduate of the University of Minnesota and of Rush Medical College, Chicago, and has been with the Veterans Administration since World War I. He is a member of the Denver City and County Medical Society and the American College of Chest Physicians and is vice president of the Association of Military Surgeons of the United States.

MENTAL HOSPITAL AT CANANDAIGUA, N. Y.

The services of eight hundred and thirty full time employees are required to operate the recently enlarged Veterans Administration hospital for nervous and mental diseases at Canandaigua, N. Y.; of these about twenty-five are physicians, three are dentists and one hundred are nurses; among many others who assist in caring for patients are members of the Gray Ladies and Red Cross, who work chiefly in the recreational wards. This plant was opened fourteen years ago with four main structures; it has been enlarged twice during that period and now comprises one hundred and thirty-four buildings and 500 acres of land, of which 316 acres are devoted to farming, 53 acres to the famous Sonnenberg gardens and pools; 41 acres are assigned to the hospital grounds proper. The gardens which formerly were part of the Sonnenberg estate are maintained today with flowers, trees and pools as they were originally laid out many years ago. According to the *Rochester Democrat and Chronicle*, on September 7 the patients numbered 1,745, of whom 1,150 were World War I veterans and 480 World War II veterans; 203 patients were at that time either at home or occupied in various capacities in the community. The total bed capacity of the hospital is about two thousand. The equipment, methods of treatment and care of these patients are of the most modern type.

Veterans' Hospital at Canandaigua, N. Y.

RESIDENCY STIPEND IN VETERANS ADMINISTRATION HOSPITALS

The Veterans Administration has announced that the stipend for resident physicians who are veterans is $275 per month. When subsistence and maintenance are furnished by the Veterans Administration, the resident reimburses the Veterans Administration (approximately $50 per month). For nonveteran physicians the pay is graded—junior, intermediate and senior. Salary is separate from subsistence and maintenance.

GUEST LECTURERS AT LITTLE ROCK HOSPITAL

A series of guest lecturers at the Veterans Administration hospital, North Little Rock, Ark., was inaugurated October 13 by Dr. Karl A. Menninger of Topeka, Kan., who lectured on modern psychiatry before the members of the staff of the hospital, the student body of the University of Arkansas School of Medicine and workers in allied fields.

PERSONAL

Dr. David E. Quinn, for many years on the staff of the Veterans Hospital at Oteen, N. C., has been assigned temporarily to the central office in Washington, D. C., pending transfer to one of the branch offices as medical director.

MISCELLANEOUS

THE RED CROSS NATIONAL BLOOD PROGRAM

Following extended discussions with national medical and hospital groups, the American National Red Cross in June 1947 adopted a program to provide for medical use, without charge for the products, sufficient blood and blood derivatives throughout the nation to help save lives and prevent suffering. This program will be developed gradually, working in close relation with the members of the medical profession and health authorities. It is estimated that from three to five years will be required before the program is in full operation. The first year may result in the establishment of not more than twenty-five centers. The program will be financed by the Red Cross, whose chapters will have the responsibility for its general conduct within their communities. Research will be carried on under the direction of the Blood and Blood Derivatives Committee of the Red Cross Advisory Board on Health Service.

Rear Admiral Ross T. McIntire, formerly surgeon general of the Navy, has been appointed director of the National Blood Program of the American Red Cross. The first unit is now being established at Rochester, N. Y.

SALE OF SULFONAMIDE DRUGS

The War Assets Administration announces the sale of sulfonamide drugs estimated to have cost $2,500,000. The articles for sale consist of sulfadiazine tablets, ampules, powder and liquid; sulfanilamide tablets and powder; sulfaguanidine tablets and powder; sulfathiazole powder and tablets, and sulfapyridine tablets. Sales will be made only to physicians, approved hospitals, governmental health agencies, licensed wholesalers and retailers, manufacturers and eligible exporters. The drugs are located at some sixteen large cities throughout the country. Details of the sales and copies of certificates of eligibility may be obtained at any WAA Customer Service Center.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Grants for Cancer Study.—The American Cancer Society had made grants for cancer research in California amounting to $115,626.71 as of June 18. The University of California, Berkeley-San Francisco, received $50,350 and the California Institute of Technology, Pasadena, $37,708.

Dr. Maumenee to Head Ophthalmology Department.—Dr. Hans Barkan, clinical professor of ophthalmology and chief of the division, Stanford University School of Medicine, Stanford University-San Francisco, became professor emeritus September 1. He has been on the faculty of the university since 1914. His successor will be Dr. Alfred E. Maumenee, of the Wilmer Ophthalmological Institute of Baltimore, who will be a professor of surgery assigned to ophthalmology beginning September 1948. Dr. Maumenee, a graduate of Cornell University Medical College, New York, 1938, was an associate professor of ophthalmology at the Wilmer Ophthalmological Institute of Johns Hopkins Hospital and Johns Hopkins University, 1938-1943. He served in the medical corps of the U. S. Navy from 1944 to 1946. In the meantime, Dr. Dohrmann K. Pischel, clinical professor of ophthalmology, will act as chief of the division.

Survey of Japanese Children.—William W. Greulich, Ph.D., professor of anatomy, Stanford University School of Medicine, Stanford University-San Francisco, and director of the Brush Foundation, and Mrs. Greulich have returned after completing a three months' survey of child health in Guam and Japan. In Guam they surveyed the physical and nutritional status of school children under the joint auspices of the Navy Department and the National Research Council. In Japan the Greulichs made a preliminary roentgenologic and anthropometric study of children in Hiroshima and Nagasaki who were exposed to the radiation from atomic bombs. Observations were also made in Kure and Sasebo, whose populations resemble those of Hiroshima and Nagasaki but escaped atomic-bombing. The Japanese study was made for the National Research Council's Committee on Atomic Casualties and was conducted under the auspices of the Japanese National Institute of Health. Information was obtained for the basis of a long term investigation of the growth and development of the Japanese children in those areas.

CONNECTICUT

Cancer Headquarters Relocated.—The Connecticut Cancer Society voted at the recent annual meeting to locate its permanent headquarters in New Haven. Heretofore the state office of the society has been in Waterbury.

Dr. Harvey to Head Section of Oncology at Yale.—A special section in the department of surgery dealing with oncology has been established at Yale University School of Medicine, New Haven. Dr. Samuel C. Harvey has retired as chairman of the department of surgery to become Yale's first professor with special reference to oncology. He will assume responsibility for stimulating the university's attack on cancer and for training medical students and physicians in the diagnosis, treatment and care of the disease. The new chair in surgery is supported by grants from the National Cancer Institute of the U. S. Public Health Service and Mr. Robert E. Hunter, Pasadena, Calif. Dr. Harvey received his medical degree from Yale in 1911; he has been a member of the faculty since 1917 and in addition to serving as chairman in the department of surgery he has been surgeon in chief of the New Haven Hospital. The tumor clinic at Yale was set up in 1928, the atypical growth research unit in 1932 and tumor registry in 1936. Yale is also headquarters for the Jane Coffin Childs Memorial Fund for Medical Research.

FLORIDA

Diabetic Association at Miami.—Twenty-six physicians of Miami interested in diabetic problems have formed the Miami Diabetic Association with Dr. Carlos A. P. Lamar, president, and Dr. Harold Rand, secretary. Interested physicians in the Miami area are invited to affiliate. The second meeting was held on August 12.

ILLINOIS

Dr. Hale Joins Fifty Year Club.—Physicians of the Six County Medical Association honored Dr. E. Vincent Hale October 9 for a half century of service to the public as a physician in Anna. He was taken into the membership of the Fifty-Year Club at a banquet. Dr. Hale, a graduate of the Beaumont Hospital Medical College, now St. Louis University Medical School, 1897, is still active in community and state affairs and will continue to practice. He will be honored also at the meeting of physicians November 11 in Belleville.

Refresher Courses on Cancer.—The Illinois Division of the American Cancer Society will offer one of three medical refresher courses on cancer to be held in Chicago November 17 to 21. Invitations have been extended to all county medical societies to select members to attend. One day sessions will be held at Northwestern University Medical School, the University of Illinois College of Medicine, University of Chicago School of Medicine, Loyola University School of Medicine at Mercy Hospital and Michael Reese Hospital. Arrangements have been made for a series of lectures, conferences and clinics.

Chicago

The Annual Pusey Dinner.—The second annual William Allen Pusey Dinner was held at the University Club of Chicago October 15 for members of the Chicago Dermatological Society. The speakers were Drs. Otto H. Foerster and Leonard F. Weber. Dr. Pusey was a charter member of the society and established the fund for the annual dinner.

Expand Services in the Field of Speech and Hearing.—The School of Speech and the Medical School of Northwestern University will expand their educational and clinical services in the fields of speech and hearing by establishing a new graduate course in ear, nose and throat. Dr. Howard C. Ballenger, associate professor of otolaryngology, will supervise the new program, with Dr. Elmer W. Hagens, assistant professor of otolaryngology, conducting a basic course in ear, nose and throat. Dr. George E. Shambaugh Jr., assistant professor of otolaryngology, will teach a course on the fenestration operation. Guidance in the selection of hearing aids will be a part of the new program, and Raymond Carhart, Ph.D., professor of audiology and director of the School of Speech's hearing laboratory on the Evanston campus, will supervise testing, oral rehabilitation, lip reading, auditory training and speech control before and after operations, thus coordinating medical and surgical work with the department of audiology. The addition of a laboratory in the medical school will enlarge the activities of the School of Speech Hearing Laboratory and permit a greater number of patients to be accommodated. About 600 children and adults with hearing deficiencies have been assisted in the Evanston laboratory during the last year.

INDIANA

Dr. Sensenich to Receive First Special License Plates.—A set of automobile license plates bearing the letters "M.D." will be issued to each Indiana physician in 1948, according to Tom Bath of South Bend, Secretary of State. Mr. Bath will present "M.D. 1" to his fellow townsman, Dr. Roscoe L. Sensenich, President-Elect of the American Medical Association. The purpose of the special numbers is to identify physicians' automobiles which may be on emergency runs. Indiana physicians have never received special license plates before.

Clinical Conference at Bluffton.—The Wells County Medical Society held a clinical conference at the Bluffton Country Club, Bluffton, October 17 which sixty-six physicians from the state attended. The program was so successful that the society may make the conference an annual affair. Physicians on the program were:

Harry B. Weber, Rochester, Minn., X-Ray Manifestations of Disorders of the Small Bowel.
Robert B. Wilson, Rochester, Minn., Infertility.
Harry A. Oberhelman, Chicago, Acute Appendicitis and Its Complications in Infancy and Childhood.
Charles A. R. Connor, New York, Rheumatic Fever.
John D. Van Nuys, Indianapolis, Problems in the Field of Medical Education.
Bruce K. Wiseman, Columbus, Ohio, The Spleen, Hypersplenism and the Blood Dyscrasias.

MAINE

Cancer Research Laboratory Destroyed by Fire.—The Roscoe B. Jackson Memorial Laboratory, Clarence C. Little, Sc. D., director, Bar Harbor, was completely destroyed in the recent forest fires. The Damon Runyon Memorial Fund has given $50,000 toward reestablishing the laboratory.

MASSACHUSETTS

Society News.—The Norfolk District Medical Society will observe Tufts Night at its meeting November 25, 8:00 p. m., in the Boston Medical Library. Subjects to be discussed include Nephritis in Children, Nitrogen Mustard Therapy in Hodgkin's Disease and Portacaval Anastomosis for Portal Hypertension.

To Broadcast Medical Round Table.—Massachusetts General Hospital in the early part of December will join the four Boston hospitals in presenting "Medical Center of the Air" programs over WNAC and the Yankee Network under the auspices of the Yankee Network Institute. The Medical Center series began in April of this year with Peter Bent Brigham, Massachusetts Memorial, Boston City and Beth Israel hospitals cooperating. The program presents important timely topics discussed in round-table fashion by physicians from these institutions.

MICHIGAN

Dr. Altland Appointed State Health Commissioner.—Dr. John K. Altland, who has been acting state health commissioner for the past month (THE JOURNAL, October 18, p. 442), has been named state health commissioner for a four year term.

Muskegon County Appoints Full Time Secretary.—Muskegon County Medical Society, Muskegon, is the third Michigan county medical society to appoint a full time executive secretary. Lucy W. Bartlett is the appointee. The medical societies of Wayne and Genesee counties have had executive secretaries for many years.

Cerebral Palsy Clinic at Kalamazoo.—A two-day cerebral palsy clinic, the second this year, will be held at Bronson Hospital, Kalamazoo, December 9-10, under the auspices of the Kalamazoo County chapter of the Michigan Society for Crippled Children. Dr. Meyer A. Perlstein, Chicago, will again be the examining physician. The clinic will be open to cerebral palsy victims up to the age of 21 years who are referred by their own physicians and have cleared through the field representative for the county crippled children's chapter.

Identification Cards for Diabetic Persons.—The Kalamazoo Academy of Medicine has approved the distribution of identification cards to be carried by all Kalamazoo residents with diabetes. The cards give the bearer's name, address, diabetic condition, physician's name and telephone number, and first aid treatment for diabetic coma. Cards are being distributed free of charge to the city's 4,000 victims of the disease. The cards will serve to identify persons who happen to be found on the street in diabetic coma. The Kalamazoo police department has welcomed the identification card project.

MINNESOTA

Dr. Helmholz Appointed to International Children's Fund.—Dr. Henry F. Helmholz, Mayo Clinic, Rochester, has been appointed chief medical consultant for Europe of the International Children's Emergency Fund of the United Nations with headquarters in Paris, France, where he arrived about November 5. He will be responsible, in cooperation with the chief technical consultant of the fund, for the organization and direction of the European staff of pediatricians, nutritionists, nurses and child welfare consultants. He will assist the various governments on plans, personnel and projects and will collaborate with the European technical staff of the World Health Organization and other units of the United Nations concerning the health and welfare of children in Europe.

NEW JERSEY

Surgeons' Chapter Meeting.—The New Jersey section, United States Chapter, International College of Surgeons, will hold a clinical meeting November 12 at St. Michael's Hospital, Newark, beginning at 8 p. m. and ending with dinner at the Essex House at 7 p. m.

New Director of Physiology.—Dr. Carl G. Hartman, professor emeritus of physiology and zoology of the University of Illinois, Urbana, Ill., has joined the Ortho Research Foundation at Raritan as director of physiology and pharmacology; for six years he has been head of the department of physiology and zoology at the University of Illinois, Urbana, Ill., and previously was research associate in the department of embryology, Carnegie Institute, Johns Hopkins Medical School. The foundation was established Jan. 17, 1944 by Ortho Products, Inc., for research in various phases of human fertility. Dr. Clair E. Folsome is director of research.

NEW YORK

Postgraduate Instruction.—The state medical society and department of health have arranged postgraduate instruction for the Sullivan County Medical Society, November 19 at 8 p. m. in the Monticello Hospital, Monticello. Dr. Emanuel Appelbaum, New York, will speak on "Meningitis." The Cortland County Medical Society will hear Dr. Ferdinand J. Schoenick, Syracuse, speak on "Gynecology in General Practice" November 21 at 9 p. m. at the Cortland County Hospital, Cortland.

Mr. Baruch to Address Prepaid Care Plans Dinner.—The Medical Society of the State of New York, the Coordinating Council of the Five County Medical Societies of Greater New York and the Greater New York Hospital Association are sponsoring a dinner November 19 at the Hotel Biltmore. A report will be made on the progress of prepaid medical and hospital care in the New York area by the United Medical Service, the Doctors' Plan and Associated Hospital Service, and New York's Blue Cross Plan. The guest speaker will be Mr. Bernard M. Baruch.

Rochester Inaugurates Blood Bank Program.—The first center for the National Blood Program of the American Red Cross will be set up by the Rochester Chapter by January 1. The city was chosen, according to Dr. Ross T. McIntire, director of the national program, because of its fine chapter organization and record during the war in collecting 303,397 pints of blood, the excellent hospitals and educational facilities for continued research. The local center will cover the eleven-county Rochester area taking in seventeen Red Cross chapters and a population of about 1,000,000 persons.

New York City

Study of Glutamic Acid.—Columbia University has been awarded grants totaling $39,000 for further study on the use of glutamic acid by the Rockefeller and the New York foundations. The foundations stipulated that the funds be used in research in brain chemistry which will be carried on by Dr. Heinrich B. Waelsch at the New York State Psychiatric Institute and Hospital. Early this year Columbia University scientists reported that glutamic acid may in some cases boost the mental powers of children who have relatively high I.Q.s, but who also have petit mal.

Window Cleaner Sentenced for Practicing.—It is reported that John Moses, aged 48, a window cleaner who posed as "former doctor to the King of Arabia and to the King of Liberia," was sentenced September 9 in special sessions court by Justice William B. Northrop to six months in jail for practicing medicine without a license. He had been extracting as much as $200 from patients by using "a new atomic medicine."

Appoint Chief of Obstetrics Department.—Dr. Frank P. Light, clinical professor of obstetrics and gynecology since 1946, has been appointed chief of the department of obstetrics and gynecology, Long Island College Hospital, succeeding Dr. Alfred C. Beck, resigned. Dr. Light joined the teaching staff of Long Island College of Medicine in 1935, since when he has also been affiliated with the Kings County Hospital. Dr. Light is a graduate of the University of Minnesota Medical School, Minneapolis, 1929.

Twenty-Fifth Anniversary of the Rubin Test.—The 848 page September-October issue of the *Journal* of Mount Sinai Hospital, New York, is dedicated to Dr. Isadore C. Rubin on the occasion of the twenty-fifth anniversary of the Rubin test for tubal patency by means of uterotubal insufflation and in recognition of Dr. Rubin's more than thirty years of devoted service to that hospital. This volume contains not only an historical and critical review of the Rubin test but many other articles by Dr. Rubin's associates and pupils.

OHIO

Annual Clinical Assembly.—The College of Medicine, Ohio State University, Columbus, announces the Annual Post-Collegiate Clinical Assembly to be held on December 6. Lectures and discussion groups will constitute the scientific program. Class reunions and fraternity banquets are planned for the evening. All physicians are welcome to participate.

Graduate Course in Allergy.—A graduate course in allergy was given at the University of Cincinnati College of Medicine, November 3-8, in cooperation with the American College of Allergists. Forty outstanding physicians and scientists were on the teaching staff. The program presented such fundamentals as physiology, immunology, psychosomatics and pathology; special allergies; pharmacology of drugs used in treatment; preparation of allergenic extracts; technics of skin testing, and the determination of allergic history.

PENNSYLVANIA

Public Relations Program.—As part of its public relations program the Medical Society of the State of Pennsylvania has prepared a booklet for distribution to the public in which the society summarizes its activities in the interest of public health. The booklet points out, for example, that there is an easy method for wage earners of Pennsylvania to budget the major cost of sickness in advance and that the Blue Shield Plan of the Medical Service Association of Pennsylvania is a voluntary plan having the full support of the medical profession of the state. The booklet outlines what is being done for the control of communicable disease, malnutrition, rehabilitation of the handicapped, medical care of the needy, mental disease, chronic diseases and cancer, venereal disease, industrial health, rural health, sanitation and the care of disabled veterans. The state medical society has also issued other pamphlets and reprints available for distribution in an effort to carry out its public relations program.

Philadelphia

Resident and Ex-Resident Physicians Banquet.—The sixty-first annual banquet of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held on December 2 at 7 p. m. Reservations may be obtained by writing to Dr. Robert C. McElroy, Room 514, 133 South Thirty-Sixth Street, Philadelphia 4.

Dr. Ivy Gives the Ulrich Lecture.—The annual lecture given by the Epsilon Chapter of the Alpha Kappa Kappa Fraternity in memory of Dr. George A. Ulrich, clinical professor of obstetrics, Jefferson Medical College of Philadelphia, was held October 20. The address was given by Dr. Andrew C. Ivy, vice president in charge of the Chicago professional colleges, University of Illinois, on "Experiments in Resuscitation from Asphixia."

The Annual Strittmatter Award.—The Philadelphia County Medical Society awarded the twenty-fourth Strittmatter Award to Dr. Robert H. Ivy at its meeting October 8 in Philadelphia. Following the acceptance of the award, Dr. Ivy spoke on the development of plastic surgery. The award was established by Dr. Strittmatter in May 1923 by a fund, the income from which is paid each year to the Philadelphia County Medical Society to provide a gold medal to be awarded "to any physician presenting the society the most valuable contribution to the healing art or to one of the fundamental sciences of medicine." The recipient is chosen each year by the Strittmatter Award Committee of the society.

RHODE ISLAND

The Chapin Fellowship.—The Charles V. Chapin Fellowship for Research in Contagious Diseases has been established by the will of Dr. Chapin's widow. The governing board of the Chapin Hospital will select a fellow who will devote full time to research work on contagious diseases, and for whom the hospital will provide room, board and equipment. If in any consecutive period of two years no person has been selected for the research work, the trust will terminate, and the estate will be given to the Rhode Island Hospital Trust Company to be managed as part of the Rhode Island Foundation. Dr. Chapin, who died Jan. 31, 1941, was superintendent of health of Providence from 1884 to 1932. He was largely responsible for the establishment of Providence City Hospital, which later changed its name to the Charles V. Chapin Hospital.

TEXAS

Cancer Research Hospital Appoints Medical Editor.—Russell W. Cumley, Ph.D., has been appointed to the recently created position of medical editor and director of publications of the M.D. Anderson Hospital for Cancer Research, Houston. Dr. Cumley is a graduate of the University of Texas and for three years before the war was on the staff of the University of Wisconsin. For the past two years he has been medical editor at Abbott Research Laboratories, North Chicago, Ill.

Appoint Head of Department of Biophysics.—Allen F. Reid, Ph.D., former director of Columbia University chemical and radioactivity research for the Manhattan Project in New York City, has joined the faculty of Southwestern Medical College, Dallas, as associate professor and chairman of the college's department of biophysics. He will also serve as biophysicist at Baylor University Hospital in Dallas. At the college he will initiate a biophysical cancer research program, part of which will be sponsored by the American Cancer Society. Formerly he was on the faculty of the University of Chicago.

Traveling Fellowship.—Dr. Gilbert H. Fletcher has been appointed traveling fellow in the department of radiology, University of Texas, M. D. Anderson Hospital for Cancer Research. This fellowship establishes an exchange plan whereby students of cancer from other countries may come to the M. D. Anderson Hospital for brief courses in training and consultation and in return the personnel of the M. D. Anderson Hospital may visit outstanding institutions abroad. Dr. Fletcher is now making a study of European institutions devoted primarily to radiologic investigation and treatment. He will visit Radiumhemmet, Stockholm, Sweden, the Royal Free Cancer Hospital, London, England, the Institute of Radium, Curie Foundation, Paris, France, and others. After receiving his M.D. degree in 1941 from the University of Brussels Faculty of Medicine, Dr. Fletcher came to the United States in 1942 and served as a resident and instructor in radiology at the New York Hospital and Cornell University Medical College. He served in the Army of the United States as a roentgenologist until June 1947.

VIRGINIA

Honored by His Neighbors.—A Community League meeting of more than two hundred persons was held October 8 in Stewartsville to honor Dr. Charles C. Richards, who for thirty-five years has practiced in the Stewartsville section of Bedford County. The doctor was presented a silver tray appropriately inscribed and a purse of about $800 from his neighbors.

New Bureaus in State Health Department.—Dr. William F. Wagner, director of tuberculosis control for the San Francisco City-County Health Department, has been appointed director of the new Bureau of Tuberculosis Control in the state health department, effective November 1. Dr. Wagner graduated from Johns Hopkins University School of Medicine, Baltimore, 1936. Dr. Louise F. Galvin, department specialist in rheumatic fever control, has been appointed chief of a new Crippled Children's Bureau. She is a graduate of the Medical College of Virginia, Richmond, 1930. Creation of the two new bureaus is the result of the dissolution of the former Bureau of Crippled Children and Tuberculosis Outpatient Services. Dr. Peyton M. Chichester, former assistant director of local health services and acting director of the divided bureau, has been transferred to other duties in the department.

WEST VIRGINIA

Rural Health Conference.—The first Rural Health Conference in West Virginia, sponsored by the West Virginia State Medical Association, will be held at Jackson's Mill, November 20, with the committee on rural health in charge. Dr. Henry B. Mulholland, Charlottesville, Va., regional chairman of the American Medical Association Committee on Rural Medical Service, will be present. Representatives of farm organizations, the state health department, West Virginia University School of Medicine, the extension service at the university, and medical and hospital service plans will also attend.

Complete State Hospital Plans.—The West Virginia State Hospital and Health Center Construction Plan has been completed by the State Department of Health and has been submitted to the Surgeon General for approval. Total calculated need of the state at present construction costs is estimated to be $130,000,000 in new construction, the state providing $90,000,000. A total of about $7,500,000 in federal funds will be allocated to West Virginia over a five year period. The state plan includes a system of priorities under which federal funds will be granted to nonprofit groups which build hospitals or health centers under the state plan.

Auxiliary Announces Essay Contest for High Schools.—The Woman's Auxiliary of the West Virginia State Medical Association is preparing an essay contest in high schools of the state on "The Proposed Cost and Implications of Socialized Medicine." The first prize is $500; the second, $250, and the third, $100, with a $25 prize for the winner in each county. Manuscripts, limited to 1,500 words, are to be evaluated by each high school; then selected manuscripts will be submitted to a county judging committee by March 1, 1948. A state judging committee will select the winners by May 1. Source material will be mailed without charge on request to Mrs. Delmas E. Greeneltch, Wheeling, who is in charge of the contest. The auxiliary urges all county presidents to take immediate action to obtain the added $850 needed to make the contest a success. Mrs. Ross P. Daniel, Beckley, is auxiliary treasurer.

ALASKA

Appoint Tuberculosis Control Officer.—Dr. Max M. Van Sandt, assistant medical director of the Alaska Native Service, has been transferred from Juneau to Mount Edgecumbe Institution at Sitka. He will act as tuberculosis control officer and will be responsible for the coordination of the activities of all Alaska Native Service hospitals on Japonski Island. He is to establish a clinic for the service personnel at Mount Edgecumbe and another for natives of Sitka. He will work in conjunction with Dr. Leo J. Gehrig, Territorial Department of Health, on tuberculosis control.

GENERAL

Directory of Diplomates of Orthopedic Board.—The American Board of Orthopaedic Surgery has been endeavoring to secure the latest permanent addresses of its diplomates for publication in its next brochure, February 1948. Diplomates of the board who have not yet returned the postcard giving their permanent addresses to the secretary of the board should do so soon. Due to the volume of work in connection with the Part II examination, diplomates are requested to forward the requested information to the secretary, Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles, 14. The new directory will be published in February and will include those candidates who pass the examination in January 1948.

Sedgwick Memorial Award.—Dr. Reginald M. Atwater, New York, received the annual Sedgwick Memorial Award of the American Public Health Association for distinguished service in public health, at a meeting of the Association in Atlantic City, N. J., October 7. Dr. Atwater, executive secretary of the association for the past twelve years, was cited for his part in the growth of the association. This medal was established in 1926 as a memorial to William P. Sedgwick, Ph.D., who for thirty-eight years was professor of biology and public health at the Massachusetts Institute of Technology. He helped to found the Harvard School of Public Health in 1913.

Dermatologists' Annual Meeting.—The sixth annual meeting of the American Academy of Dermatology and Syphilology will be held at the Palmer House, Chicago, December 6-11. Special courses in histopathology and mycology will be given at the medical schools of the University of Illinois and Northwestern University. Teaching clinics will be held at the University of Illinois College of Medicine on the afternoons of December 8-10. There will be special courses in roentgen and radium therapy, bacteriology of the skin, lesions of the mucous membranes, industrial dermatoses, specific granulomas and dermatosclereses; also a number of symposiums, round table and panel discussions.

Meeting of Academy of Allergy.—The American Academy of Allergy will hold its annual convention at Hotel Jefferson, St. Louis, December 15-17. Physicians are cordially invited to attend the sessions as guests of the academy by registering without payment of fee. The program and the scientific and technical exhibits have been arranged to cover a wide variety of conditions in which allergic factors may be important. Papers will be presented dealing with the latest methods of diagnosis and treatment. Round table conferences will be held on Monday afternoon. Advance copies of the program may be obtained by writing to Charles H. Eyermann, M.D., 634 North Grand Boulevard, St. Louis.

Research Grants and Fellowships Available.—Applicants for grants in aid for physiologic, biochemical, pathologic and clinical research on cardiovascular problems to begin July 1, 1948 will be received by the Life Insurance Medical Research Fund up to Jan. 15, 1948. About $500,000 will be awarded for these grants. Applications for postgraduate fellowships for training in research for 1948-1949 will be received up to Jan. 1, 1948. Preference is given to candidates who wish to work in the field of cardiovascular disease and to candidates who wish to work in institutions other than those in which they obtained most of their experience. An M.D. or Ph.D. degree or the equivalent is required. The annual stipend usually is between $2,500 and $3,500. About twelve fellowships will be available. Application blanks may be secured from the Scientific Director, Life Insurance Medical Research Fund, 2 East 103d Street, New York 29.

Health in the United States.—The U. S. Public Health Service announced October 25 that the general health of the people in the United States, maintained during the war years at a high level, continued favorably during the first half of 1947. A lower incidence prevailed for that period for diphtheria, malaria, measles, meningitis, poliomyelitis, scarlet fever, smallpox, typhoid, typhus and the dysenteries; increases were reported for influenza, chickenpox, whooping cough, tularemia, septic sore throat and undulant fever. Although more cases of influenza were reported in the first six months of the year than for the same period in 1946, the estimated death rate for influenza and pneumonia combined was 5 per cent below the rate for the same period in 1946. The estimated maternal mortality rate due to puerperal causes was 1.5 per thousand live births as compared with 1.7 for the corresponding period in 1946. The adjusted infant mortality rate was estimated to be 34.6 per thousand live births as compared with 38.4 for the same period in 1946.

New Medical Series on Yankee Network.—After three years of broadcasting the program "Doctor's Orders" from Providence, R. I., as the public service forum of the Rhode Island Medical Society, this series has been taken over by the Yankee Network and is broadcast weekly as the public service forum of the medical profession of New England. The fifteen minute period is devoted to a brief dramatization of some situation concerning health or disease followed by an interview with a doctor in his own local broadcasting station, thus providing the New England communities with hometown atmosphere as well as health education by their own physicians. Secretaries of county medical societies throughout the area have been requested to schedule physician members as guest speakers on this program. "Doctor's Orders" was originated by Frank and Bettina Jones of Radio Productions, Providence, R. I. They will continue to prepare the script and produce the program on the Yankee Network on Sundays from 1:15 to 1:30 p. m., Eastern Standard time.

LATIN AMERICA

Congress of Pan-American Medical Women's Alliance.—The first Congress of the Pan-American Medical Women's Alliance will be held at the Hotel Reforma, Mexico, D. F., November 17-20. To facilitate transportation for the members who are planning to attend, the *Medical Woman's Journal*, 409 York St., Cincinnati 14, will supply on request information regarding schedules and other desired travel data. No passport is required for entry into Mexico, only a tourist card which can be procured from the nearest Mexican Consul.

Brazilian Cardiology Society.—At the fourth annual meeting of the Brazilian Cardiology Society in São Salvador da Bahia July 1-7 hypertensive heart disease and rheumatic heart diseases were discussed. Officers elected for the coming year include Professor Octavio de Magalhães, president; Prof. Roberto Menezes de Oliveira, general secretary, and Dr. Emiliano Lourenço Gomes, treasurer, all of Rio de Janeiro. The 1948 meeting will be in Porto Alegre, and rheumatic heart disease and social assistance for the cardiac patient will be the subjects. Society headquarters are at Av. Mem de Sa, 197, Rio de Janeiro, Brazil.

EGYPT

Cholera in Egypt.—The Associated Press reported November 2 that the death toll of the thirty-nine day old cholera epidemic, which has spread to six of the eight upper provinces, has increased to 8,300. As many as 893 new cases have been reported in one day. According to Reuters, Egyptian schools were permitted to reopen November 3 for students holding inoculation certificates, because the epidemic had shown a slight downward trend during the preceding forty-eight hours. The death toll of 338 for November 2 was the lowest since October 19.

Marriages

HOMER ALDEN SIEBER, Roanoke, Va., to Miss Charlotte Lewis Mock at Jacksonville, Ala., July 3.

PHILIP DURAND GORDY, Ann Arbor, Mich., to Miss Elizabeth Gairey of New York, June 15.

GILBERT E. GANONG, Saranac, N. Y., to Miss Myra Elizabeth Downey of Clayburg, June 28.

CHILTON CRANE, Richmond, Mass., to Miss Louise Harrison Penhallow of Waban, July 19.

HENRY ABRAMS, Princeton, N. J., to Miss Susan Frances Ring of Trenton, August 17.

WILLIAM CLARE BARCLIFT to Miss Mary Chappell, both of Birmingham, Ala., July 5.

RUTH BURGESS, Roosevelt, Utah, to Mr. Reynold C. Merrill of Logan, June 26.

Deaths

Tiffany Johns Williams ✠ Charlottesville, Va.; born in Barstow, Md., in 1897; Johns Hopkins University School of Medicine, Baltimore, 1923; professor of obstetrics and gynecology at the University of Virginia Department of Medicine; specialist certified by the American Board of Obstetrics and Gynecology, Inc. member of the South Atlantic Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; at one time on the faculty of Yale University Medical School in New Haven, Conn., and the State University of Iowa College of Medicine in Iowa City; formerly obstetrician and gynecologist at the Great Falls (Mont.) Clinic; on the staff of the University of Virginia Hospital, where he died August 19, aged 49, of coronary occlusion.

Montrose Thomas Burrows ✠ Pasadena, Calif.; born in Halstead, Kan., in 1884; Johns Hopkins University School of Medicine, Baltimore, 1909; member of the American Association of Anatomists and the American Society for Experimental Pathology; served during World War I; at one time on the faculty of Washington University School of Medicine in St. Louis, where he was on the staff of the Barnard Free Skin and Cancer Hospital; formerly instructor in anatomy at Cornell University Medical College in New York and associate in pathology at his alma mater; fellow and assistant at the Rockefeller Institute for Medical Research in New York from 1909 to 1911; affiliated with Huntington Memorial and St. Luke's hospitals; died August 21, aged 62, of coronary sclerosis.

James Herman Abbott, Philadelphia; Hospital Medical College, Atlanta, 1910; also a dentist; died in Methodist Hospital June 8, aged 76, of cerebral hemorrhage.

Joseph Elwell Asay, Rock Island, Ill.; Cincinnati College of Medicine and Surgery, 1892; died in St. Anthony's Hospital August 6, aged 80.

Walter Compton Bacon ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1911; specialist certified by the American Board of Pediatrics; on the staff of Maryland General Hospital; died in July, aged 61.

Samuel Leroy Barber, West Chester, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1901; member of the American Medical Association; for many years president of the school board; served on the staff of the Homeopathic Hospital; died August 12, aged 68, of cerebral hemorrhage.

George Raymond Baxter ✠ Newton, Mass.; Tufts College Medical School, Boston, 1922; served on the staffs of St. Elizabeth's Hospital in Boston and Newton Hospital; died in Boston July 24, aged 50, of cerebral thrombosis.

Homer Clark Bennett, Lima, Ohio; University of Wooster Medical Department, Cleveland, 1888; Medical College of Ohio, Cincinnati, 1889; died in St. Rita's Hospital July 23, aged 81, of coronary thrombosis.

James Manning Bernhard ✠ Walden, N. Y.; Syracuse University College of Medicine, 1906; medical examiner for the local draft board during World War II; served on the staffs of St. Luke's Hospital in Newburgh and Cornwall (N. Y.) Hospital; member of the board of trustees, Walden Savings Bank; died August 24, aged 68, of tuberculosis.

William Worthing Calhoun, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1897; member of the American Medical Association; veteran of the Spanish-American War; died June 11, aged 78, of carcinoma.

Samuel Ross Capen, Upton, Mass.; New York Homeopathic Medical College and Hospital, New York, 1889; chairman and for many years trustee of the public library and school physician; served as a member and chairman of the school committee and as a member of the board of health; died in Milford (Mass.) Hospital August 21, aged 79, of cerebral hemorrhage.

John E. Cargill, Stroud, Okla.; St. Louis College of Physicians and Surgeons, 1920; died July 25, aged 84, of pulmonary tuberculosis.

Glen Evan Cheley ✠ Denver; Harvard Medical School, Boston, 1920; diplomate of the National Board of Medical Examiners; member of the founders group of the American Board of Surgery; member of the Western Surgical Association; fellow of the American College of Surgeons; formerly associate professor of surgery at the University of Colorado School of Medicine; served on the staffs of St. Joseph's and Children's hospitals; found dead July 16, aged 55.

Warren Ashley Coleman, Eastman, Ga.; Emory University School of Medicine, Atlanta, 1917; member of the American Medical Association and the Southeastern Surgical Congress; fellow of the American College of Surgeons; founder of Coleman Hospital; formerly lieutenant colonel on the staff of Governor Eugene Talmadge; died June 15, aged 52, of coronary thrombosis.

Warner R. Coumbe, Richland Center, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; member of the American Medical Association; died in Colfax July 14, aged 82, of cerebral thrombosis.

Charles Joseph Douglas, Boston; Hahnemann Medical College and Hospital, Chicago, 1891; served as president of the Historical Society in Dorchester, Mass., and the Boston Children's Museum; died in Massachusetts Memorial Hospital August 2, aged 87, after an operation for carcinoma of the stomach.

John J. Drake, Santa Ana, Calif.; University of Buffalo School of Medicine, 1889; died August 5, aged 85, of cerebral hemorrhage.

Louis Napoleon Ellingwood, Skowhegan, Maine; Eclectic Medical College, Cincinnati, 1884; University of the City of New York Medical Department, 1893; member of the American Medical Association; in 1931 had the "fifty year" medal presented to him by the Maine Medical Association for his fifty years in practice; died July 6, aged 91, of senility.

Oliver Walsworth Everett, Lincoln, Neb.; University of Nebraska College of Medicine, Omaha, 1905; fellow of the American College of Surgeons; served during World War I; at one time team physician for the University of Nebraska football team; on the staffs of Lincoln General, St. Elizabeth and Bryan Memorial hospitals; formerly superintendent of the Hastings State Hospital in Ingleside; died July 22, aged 65, of cardiorenal disease.

James Andrew Fountain ✠ Macon, Ga.; Vanderbilt University School of Medicine, Nashville, Tenn., 1917; fellow of the American College of Physicians; served as president of the Sixth District Medical Society; a medical officer during World War I; on the staffs of Macon Hospital, Clinic Hospital, Middle Georgia Hospital and Mercy Hospital, where he died June 26, aged 54, of coronary occlusion.

Solomon Goldstein ✠ Brooklyn; University and Bellevue Hospital Medical College, New York, 1921; first lieutenant in the medical reserve corps of the United States Army during World War I, not on active duty; served as medical examiner and inspector of Selective Service Board during World War II; on the staffs of the Brooklyn Women's and Kingston Avenue hospitals; died June 5, aged 49, of cerebral hemorrhage and hypertension.

Friedrich K. W. Grosse, Dingmans, Pa.; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1893; member of the American Medical Association and the Medical Society of the State of Pennsylvania; died August 10, aged 78, of chronic myocarditis.

Rupert Van Alstyne Hauser Jr., Scotia, Calif.; Stanford University School of Medicine, San Francisco, 1938; member of the American Medical Association; chief surgeon at the Scotia Hospital; killed August 8, aged 34, when the airplane he was piloting crashed in Fauts Springs.

Arthur G. Henderson, Imboden, Ark.; Missouri Medical College, St. Louis, 1876; Bellevue Hospital Medical College, New York, 1887; member of the American Medical Association; for many years president of the school board; died July 25, aged 95, as the result of a fall.

Leslie Phillips Herd, Elizabethton, Tenn.; University of Tennessee College of Medicine, Memphis, 1925; member of the American Medical Association; served during World War II; died August 8, aged 47, of coronary thrombosis.

Harry Eugene Higgins, Norwich, Conn.; New York University Medical College, New York, 1896; member of the American Medical Association; on the staff of the Backus Hospital; died August 8, aged 75, of cerebral thrombosis.

Albert William Hiller ✠ Long Beach, Calif.; University of Southern California College of Medicine, Los Angeles, 1909; on the staffs of Community Hospital, St. Mary's Hospital and Seaside Memorial Hospital, where he died July 28, aged 67, of carcinoma of the esophagus.

Walter Gotthard Hirsemann, Central Valley, N. Y.; Long Island College Hospital, Brooklyn, 1903; member of the American Medical Association; on the staff of the Cornwall (N. Y.) Hospital; died in New York Hospital recently, aged 67, of carcinoma of the pancreas.

William F. Hopkin, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1892; formerly on the staff of the Episcopal Hospital; died July 30, aged 67, of coronary occlusion.

Andrew Jackson Hosmer, Reno, Nev.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885; past president of the Utah State Medical Association; member of the American Medical Association; fellow of the American College of Surgeons; served on the staff of the Holy Cross Hospital in Salt Lake City; for many years division surgeon for the Union Pacific Railroad Company and surgeon for the Tintic Standard Mining Company; died in Los Angeles July 22, aged 88, of arteriosclerotic heart disease.

Frederick R. Hyslop, Brandon, Wis.; Rush Medical College, Chicago, 1895; served as city health officer of Whitewater; died June 30, aged 81, of chronic myocarditis.

William Henry Johnson ✠ Buffalo; University of Buffalo School of Medicine, 1913; fellow of the American College of Surgeons; served during World War I; attending surgeon at the Emergency Hospital; died in the Buffalo General Hospital August 16, aged 58, of bronchopneumonia.

Horace Greeley Keith, Montclair, N. J.; New York Homeopathic Medical College and Hospital, New York, 1894; served on the staff of the Yonkers (N. Y.) General Hospital; died August 7, aged 74, of coronary thrombosis.

Curtis Howard Kennedy ✠ Fort Smith, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1919; affiliated with Sparks and St. Edward's hospitals; died August 5, aged 71, of coronary thrombosis.

Frederick Lambach ✠ Davenport, Iowa; University of Pennsylvania Department of Medicine, Philadelphia, 1887; county commissioner of insanity and pension examiner for many years; served during World War I; captain, medical reserve corps, U. S. Army, not on active duty; on the staffs of St. Luke's Hospital and Mercy Hospital, where he died August 7, aged 81, of heart disease.

Daniel Luttinger, Northampton, Mass.; Long Island College Hospital, Brooklyn, 1918; member of the American Medical Association and the Medical Society of the State of New York; served during World War II; died in the Veterans Administration Hospital July 6, aged 60, of coronary infarction.

William Maddux McClarin ✠ Louisville, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1923; fellow of the American College of Surgeons; for many years on the staff of the Norton Memorial Infirmary, where he died August 7, aged 49, of hypertension and nephritis.

Joseph Andrew McKee, Seattle; Trinity Medical College, Toronto, Canada, 1893; served with the Canadian and American Expeditionary Forces during World War I; died August 9, aged 76, of chronic cholangitis.

George Augustine Macnamara, National City, Calif.; Regia Università degli Studi di Bologna Facolta di Medicina e Chirurgia, Italy, 1938; member of the American Medical Association; died in the Elwyn Hospital, July 3, aged 51, of coronary occlusion.

Edward Wasgate Markens, Newark, N. J.; Baltimore Medical College, 1905; for many years physician at Essex County Jail and House of Detention; veteran of the Spanish-American War and World War I; for many years a surgeon major in the National Guard; died in East Orange August 4, aged 69, of coronary thrombosis and hypertrophied prostate.

Winfred Byrum Martin ✠ Naperville, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; served during World War I; physician for North Central College; affiliated with St. Charles Hospital in Aurora, Ill., where he died August 17, aged 70, of coronary thrombosis.

Amon Thatcher Noe, Santa Monica, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1885; died August 16, aged 83, of diabetes mellitus.

Gunnar P. Noren, Kewanee, Ill.; Keokuk Medical College, 1898; member of the American Medical Association; on the staffs of St. Francis and Kewanee Public hospitals; died August 16, aged 78, of cerebral hemorrhage.

Luther Alpheus Nowell, Colerain, N. C.; University of Maryland School of Medicine, Baltimore, 1894; bank president; died August 11, aged 78, of cerebral hemorrhage.

Eugene Thomas O'Connor, Tarrytown, N. Y.; Fordham University School of Medicine, New York, 1914; served during World War I; for many years affiliated with the U. S. Veterans Bureau; on the staff of the Veterans Administration Hospital in New York, where he died August 7, aged 66, of chronic nephritis and hypertension.

Hugh Kingsley Phillips, Helen, Ga.; Atlanta College of Physicians and Surgeons, 1913; member of the American Medical Association; past president of the Hall County Medical Society; served during World War I; died in Gainesville recently, aged 67.

Leo Joseph Podder, Boston; College of Physicians and Surgeons, Boston, 1916; died in Hull July 6, aged 61, of acute coronary infarction.

James Perry Pursell, Fort Washington, Pa.; Hahnemann Medical College and Hospital, Chicago, 1888; died August 15, aged 82, of coronary occlusion.

Henry Reis, Belleville, Ill.; Columbian University Medical Department, Washington, D. C., 1900; member of the American Medical Association; formerly a member of the state board of health; served as vice president and member of the board of directors of the Star-Peerless Brewery Company; on the staff of St. Elizabeth's Hospital, where he died August 4, aged 75, of cerebral hemorrhage.

Everett Reynolds, New Castle, Del.; Hahnemann Medical College and Hospital of Philadelphia, 1928; member of the American Medical Association; executive secretary of the local board of health, of which he had been organizer; served as county health officer; on the staffs of Delaware and Memorial hospitals in Wilmington; died August 11, aged 47, of coronary disease.

Wyndham Bolling Robertson, Kearneysville, W. Va.; University College of Medicine, Richmond, 1898; member of the American Medical Association; served overseas with the army medical corps during World War I; died in Martinsburg August 9, aged 72, of heart disease.

Lewis Franklin Robinson, Greenville, S. C.; Atlanta College of Physicians and Surgeons, 1901; died June 22, aged 67, of cerebral hemorrhage.

Fred Schermerhorn, Montrose, Colo.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1880; served as state senator and health officer; died August 18, aged 91, of hypostatic pneumonia.

Charles Aurelius Schutz, Bethesda, Md.; Washington University School of Medicine, St. Louis, 1926; served as clinical professor of pediatrics at the George Washington University School of Medicine; served overseas during World War I; on the staffs of Suburban Hospital in Bethesda, Md., and Children's Hospital and Doctors Hospital in Washington, D. C., where he died August 17, aged 54, of ulcerative colitis.

Joseph H. Simpson, Barnhill, Ill.; Missouri Medical College, St. Louis, 1887; died in Stamford, Neb., August 5, aged 85, of heart disease.

Emil Henry Sutter, Milwaukee; Chicago College of Medicine and Surgery, 1915; member of the American Medical Association; served during World War I; on the honorary staff of St. Luke's Hospital; died July 22, aged 54, of chronic hypertrophic hepatic cirrhosis.

John Wesley Tildon Jr., Chicago; Meharry Medical College, Nashville, Tenn., 1918; died August 1, aged 55, of organic heart disease.

John Maxwell Watson ✠ Enid, Okla.; Washington University School of Medicine, St. Louis, 1897; on the staff of St. Mary's Hospital; died July 31, aged 74, of coronary thrombosis.

Herman F. Weber, Newburg, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1896; also a graduate in pharmacy; member of the American Medical Association; served as health officer of the towns of Trenton, Farmington, Saukville and Fredonia; died in West Bend July 20, aged 79, of carcinoma of the liver.

Paul Edward Wesenberg ✠ Brooklyn; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; fellow of the American College of Surgeons; affiliated with Prospect Heights, Coney Island and Caledonian hospitals; died August 8, aged 66, of cardiovascular hypertension.

William E. Whittle, Iron City, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1911; member of the American Medical Association; served as health officer; died in Donalsonville (Ga.) Hospital July 22, aged 71, of coronary thrombosis.

Leonard Woods ✠ Oakland, Calif.; Stanford University School of Medicine, San Francisco, 1922; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; affiliated with the Providence Hospital and the Peralta Hospital, where he died August 19, aged 56, of rupture of the heart.

John Zeok, Braddock, Pa.; University of Louisville (Ky.) Medical Department, 1911; died July 10, aged 63, of abscess of the left lung.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 4, 1947.

The Decline in the Nation's Fertility

Much information of interest to the members of the medical profession, social research workers and statisticians is contained in the registrar-general's statistical review of England and Wales for 1938-1939, previous publication of which was prevented by the war. Much space is given to the data of marital history as far as it affects fertility. These data began to be collected for the first time in July 1938. In that year the number of legitimate births was 89.8 per thousand married women of child-bearing age (15 to 49). Of the total number of births in that year 45.4 per cent were to mothers with no previous children, 26.1 per cent to mothers with one surviving child, 22.5 per cent to mothers with between two and four surviving children, and 6 per cent to mothers with five or more children. There was steady decline in the fertility of the nation after 1871, when it was two and a half times greater than in 1938. But although it continued to decline until the end of 1941, it rose in 1942 and in 1946 was 19.1 per thousand as compared with 15.1 and 14.9 in 1938 and 1939, respectively. This was the highest birth rate recorded since 1923. In 1946 the replacement level was exceeded for the first time since 1923. This phenomenon is due to the war and is probably only temporary. The abolition of unemployment by the war and the granting of children's allowances stimulated the birth rate.

There was also an improvement in the death rates. The standardized death rate for both 1938 and 1939 was 8.5 per thousand persons living, compared with 9.3 in 1937. The lowest rate previously recorded was 9 in 1935. The infant mortality per thousand live births was 52.7 in 1938 and 50.4 in 1939, the previous low being 56.9 in 1935.

Therapeutic Value of 2,3-Dimercaptopropanol, BAL

During the war much experimental work was done on chemical warfare both in Britain and in the United States, but this method of warfare was never used. However, the work has proved of unexpected value in therapeutics. No fewer than three new remedies have been introduced. Nitrogen mustards (beta-chloroethyl amines) have proved useful in leukemia and Hodgkin's disease; diisopropylfluorophosphate, in myasthenia gravis, and 2,3-dimercaptopropanol, or BAL, in arsenic poisoning. The last is also termed British Anti-Lewisite and was discovered early in the war as the result of a research planned by the Ministry of Supply to discover an antidote to the local and systemic damage produced by contamination of the skin or eyes with arsenical vesicant gases. A report on its value in arsenical intoxications has been issued by the Medical Research Council. It is a colorless oil, readily soluble in fat solvents and to about 6 per cent in water. During 1941-1942 its value in counteracting the effects of lewisite was exhaustively studied, and BAL was finally adopted officially for the treatment of the effects of lewisite and other arsenical vesicants. Its efficacy in reversing the tissue damage caused by arsenicals depends on its formation of relatively stable ring compounds with arsenoxides, thereby diminishing the reaction of the arsenical with the tissues and increasing urinary excretion.

Clinical trial was made with BAL in 44 cases of severe arsenical dermatitis. The ampules used were prepared by a modification of the method described by Eagle in the United States; they contained 5 per cent BAL in arachis oil and benzyl benzoate. They were nitrogen-filled and sterilized. The drug was given by deep intramuscular injections into the thigh or gluteal region: first day, four injections of 2 cc. 5 per cent BAL every four hours; second, third and fourth days, 2 cc. twice a day, and fifth and sixth days, 2 cc. a day. Of the 44 patients 31 were benefited, 23 strikingly so. The mean duration from the first injection to complete or nearly complete healing was twenty-one days. The earliest sign of response was definite subsidence of the edema. In several cases evidence of relapse was seen soon after the end of the course, but this responded to a short further course. As regards toxicity, the minimal dose of 2,3-dimercaptopropanol by intramuscular injection in man to cause toxic reactions lies between 3 and 5 mg. per kilogram of body weight, while the therapeutic dose in England has been only about 1.5 mg. per kilogram. In America higher doses have been given. The toxic symptoms include, apart from subjective phenomena, lacrimation, salivation and vomiting. Clinical reports on favorable results from BAL in acute mercury poisoning and in gold intoxication have been made.

William Ernest Miles

William Ernest Miles, known all over the world for his abdominoperineal operation for cancer of the rectum, has died at the age of 78 years. He was born in Trinidad, British West Indies, and educated at the medical school of St. Bartholomew's Hospital, London. He qualified in 1891 and became a Fellow of the Royal College of Surgeons in 1894 at the early age of 25. He was demonstrator of anatomy at St. Bartholomew's and became assistant surgeon to the Royal Cancer Hospital in 1899 and surgeon to the Gordon Hospital for Diseases of the Rectum later. In 1930 the American College of Surgeons made him an honorary fellow, and a similar distinction was conferred on him by the American Proctological Society. His training as an anatomist formed the background of his rectal operations. His operation for cancer was devised after a prolonged study of the postmortem appearances of metastases and on observations in the operating theater. He gave a detailed description of the rectal lymphatics as in three groups—intramural, intermediary and extramural. Lymphatic drainage was upward by efferent vessels accompanying the superior hemorrhoidal vessels to drain into lymphatic nodes along the main trunk of the superior hemorrhoidal artery to the inferior mesenteric and aortic nodes. He introduced his abdominoperineal operation because the upward zone of spread lay beyond the reach of any operative procedure carried out solely from the perineum. With D. H. Goodsall he published "Diseases of the Anus and Rectum," which became a standard work.

Dr. Frank H. Lahey of Boston, one of the eminent American surgeons attending the Surgical Congress in London, expressed deep sorrow on behalf of that group. He said that Mr. Miles's name will ever be linked with the radical operation for removal of the rectum, and that: "We in America feel that it was he who, for us, put his procedure, which has done so much for many people, on a sound basis."

International Conference of Physicians

The International Conference of Physicians has been held in London under the presidency of Lord Moran, president of the Royal College of Physicians. It was attended by thirteen hundred members from all over the world. The British Council invited twenty-five overseas speakers, and of the hundred and twenty papers on the program one third were contributed from abroad. The conference met in eight sections under the following presidents: general medicine, Lord Moran; cardiology, Sir Maurice Cassidy; disorders of the chest, Sir Robert A. Young; dermatology, Sir Albert Gray; neurology, Dr. Gordon Holmes; pediatrics, Sir Leonard Parsons; psychiatry, Dr. Bernard Hart, and social medicine, Sir Wilson Jameson. Among the subjects discussed were Infective Hepatitis; Vitamin D in the Treatment of Cutaneous Tuberculosis; Malnutrition and the Nervous System; Surgery of Congenital Heart Disease; Pulmonary Heart Failure; Role of the Pyramidal System in Movement; BCG Vaccination; Sarcoidosis: Scabies and Tuberculosis; Social Medicine in the Curriculum; Care of the Aged and Infirm.

V 13
1947

PARIS

(From Our Regular Correspondent)

Sept. 30, 1947.

Food Poisoning Due to Meat

In the past the intoxications due to meat were rare in France. During the four years of occupation five hundred foci of botulism, involving about a thousand patients, were recorded; 93 per cent were due to preserved pork; the death rate has been 15 per thousand. Moreover, between 1942 and 1947 10,000 cases of food poisoning not ascribable to botulism occurred in France and especially in the Paris district. They were reported either by individuals or by factories or administration canteen managers. The symptoms appeared from eight to ten hours after the suspected meal; they consisted in headaches, vomiting (sometimes bilious), often profuse diarrhea, rarely fever and cutaneous eruptions; most of the patients were able to resume work on the following day and no fatal cases are known. Bacteriologic examinations have not brought to light the presence of salmonellas but, on the other hand, large quantities of staphylococci, enterococci, colibacilli, protei and various gram-positive bacteria, aerobic and anaerobic, have been found in the suspected foodstuff. As to the mode of action of these microbes and the eventual secretion of enterotoxins, that of the colibacillus—an enterotoxin—is known, but it is scarcely able to provoke such sudden and brief incidents of a toxic character. Professor Loeper and his collaborators attribute an evident part in the outbreak of food poisoning to certain amino acids as a result of a decomposition of proteins by microbic action. Among those dangerous amines they mention histamine, "tyramine" (4-hydroxyphenethylamine), tryptamine and methylamine. Those amines have been found in meat, fish and cheese, but their study is full of difficulties and has not yielded definite results as yet, save in the case of histamine, which produces reactions which differ from those observed. The bacteria found in the suspicious food, such as staphylococci, colibacilli, protei and anaerobic organisms, are capable of attacking the albuminoid molecule and thus producing amino compounds, which would explain the toxic accidents; further researches are being continued on this point. The few cases with a toxic-infectious aspect would be explained by a modification of the permeability of the digestive tube, thus facilitating the passage of intestinal bacteria which have become more pathogenic in a weakened system.

The French Society of Allergy

The French Society of Allergy met on June 17, 1947. P. Woringer, back from a journey to the United States, reported on the impressions which he brought back and emphasized the necessity to study allergic diseases from the etiologic point of view. P. Blamoutier explained the importance of house dust in causing asthma and recommended desensitization by means of intradermal injections of a solution containing dust. B. Halpern sketched the history of the development of antihistaminics. Professor Pasteur Vallery-Radot, J. Hamburger and B. Halpern have reported their results in the treatment of 146 patients with a new synthetic antihistamine drug. The president of the French Society of Allergy, Professor Pasteur Vallery-Radot, has just gone to the United States and Canada at the invitation of various universities.

Congresses

The forty-fifth French Congress of otorhinolaryngology will take place October 20-22 in the grand amphitheater of the Paris Faculty of Medicine under the presidency of Dr. G. Liebault. On the agenda are recent data on the treatment of cancer of the larynx and penicillin in otorhinolaryngology and in cervicofacial surgery.

The second International Scientific Conference of Aix-les-Bains will take place by the end of 1948. It will be devoted to degenerative rheumatism; thirty-two reports by French and foreign specialists will be presented. For information, apply to: Dr. F. Françon, 9 Rue Lamartine, Aix-les-Bains.

The tenth National Congress of Phthisiology will take place in 1948, at Easter, in Algiers. On the agenda are functional exploration of the lung in the course of pulmonary tuberculosis; indications and results of endoscopic methods in diagnosis and treatment of tracheo-broncho-pulmonary tuberculosis, and the role of District Committees for Mutual Help and Sanitary Education.

COPENHAGEN

(From Our Regular Correspondent)

Oct. 6, 1947.

New Legislation on Venereal Disease

The new venereal disease law of June 4, 1947, which came into force October 1, replaces the law of 1906 and reflects certain changes in the attitude toward these diseases in the interval. Provision is made for the revision of this new law in only five years' time, and that is significant of the rapid evolution of knowledge of and attitude toward these diseases. It is also a sign of the times that the framers of the new law expressed their conviction that the problems of venereal disease may to some extent be solved by education of the public, youth in particular. Hence, the linking of the new law with the official educational bodies in the country. The parts to be played by physician and patient are clearly defined with the object of quickly tracking down sources of infection. However wealthy the patient, he may claim free medical examination and treatment. The war and the occupation of Denmark by the Germans greatly increased the incidence of venereal diseases. In 1940 syphilis had been almost completely stamped out, whereas in 1944 the notifications of this disease had increased eightfold. In the same interval the notifications of gonorrhea were trebled.

The War and Vital Statistics

As one takes stock now of the state of public health in Denmark before, during and after the war there is much for which to be thankful. Typhoid, paratyphoid, typhus and dysentery showed a disquieting rise in 1945 on account of a wave of German refugees into the country and the return of many Danes from captivity in Germany. The latter years of the war were also marked by battle, murder and sudden death as the members of the Danish underground grappled with the invaders. Between 1943 and 1945 the number of deaths from accidents, murder and manslaughter was practically doubled, and there was an abrupt rise in the number of suicides. But apart from these reservations and a rising death rate from cardiac disease the picture is reassuring. In the years before the war the annual death rate from tuberculosis was 4 per 10,000 inhabitants whereas in the period 1941 to 1945 it was down to 3.4. In the same two periods the deaths per 10,000 inhabitants from all the other infectious diseases fell from 5.8 to 3.5. In 1942 and 1943 the total death rate per 1,000 inhabitants reached a record low of 9.6. In 1944 and 1945 it rose to 10.3 and 10.5, respectively, but this rise was hardly the responsibility of the public health authorities not directly concerned with the conduct of war.

Putting the Brakes on Bromine Suicides

The decision of the Danish public health authorities to put the bromocarbamide group of drugs (carbromal, which is also known as "adalin," and bromisoval, bromoisovalerylcarbamide) on the list of drugs to be sold to the public only on a physician's prescription has a disquieting background. For years carbromal has been sold without restriction to a public taught to regard it as a safe and effective sedative. A clue to the extent to which this drug has been used and abused is to be found in a

study by Dr. G. Magnussen of the admissions to the psychiatric department of the Copenhagen City Hospital of patients suffering from acute drug poisoning. Most of the 435 such cases admitted in 1945 and 1946 represented attempts to commit suicide, and carbromal came third in the list of drugs used with 35 cases, 2 of which were fatal. It is to be hoped that this move has slammed the door of one exit to another and hypothetically better world.

The Doctorate of Medicine

Every year a score or so of the ablest and most ambitious Danish physicians take the degree of M.D. at great cost to themselves in time and money. A recent statistical analysis puts the time at four to five hours a day for four years, and the cost at 5,000 to 6,000 kroners. (Professor Haxthausen puts the cost at about 10,000 kroners.) To what purpose? First, the advancement of science and second, the promotion of the physician, whose progress through valuable hospital appointments and whose chances of a professorship in the end are greatly favored by possession of an M.D. degree. But at what a cost! What to do about it? It has been suggested that the physician who has published valuable papers might be awarded the M.D. degree. One vice of the present system is its incompatibility with teamwork, the candidate for the M.D. being expected to make every score off his own bat. Picture the devastating fate of the candidate with the indecent temerity to condense all his original work into half a dozen pages! So there continue to accumulate vast tomes whose very dimensions assure the concealment of any spark of originality they may contain. Were physicians to compose their theses in the frame of mind in which they would dispatch a cablegram at their own expense, how easily their work could be translated into foreign languages, printed and distributed throughout the world!

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Sept. 24, 1947.

Preventive and Curative Vaccination in Chagas' Disease (Trypanosoma cruzi Infection)

Inoculation of Trypanosoma cruzi (Schizotrypanum cruzi) in certain animals including rabbits produces specific antibodies (agglutinating serums 1:30,000 and 1:50,000). In human cases of American trypanosomiasis, agglutination titers are highest during the acute stage due to the large number of parasites in the blood. Drs. Julio Muniz, Genard Nobrega and Marques da Cunha, of the Oswaldo Cruz Institute, Rio de Janeiro, inoculated a suspension of dead parasites in animals for the purpose of determining immunity response to subsequent experimentally induced infection and to note possible evolutionary changes of the trypanosome. They were also interested in studying the possible curative effect of the vaccine. Experiments were first performed on rhesus (Macaca mulatta) previously infected and on men with the natural infection before the chronic stage occurred. Rhesus were experimentally infected by contamination of the conjunctiva with feces of triatoma, rich in metacyclic forms of the parasite. Merthiolated vaccine suspensions of T. cruzi in isotonic sodium chloride solution were made from five day old parasite cultures grown on dextrose blood agar. Five samples of T. cruzi were used, four recently isolated from human cases, and one from the Dasypus species. Titers of serum agglutinins and precipitins were measured as an index of the degree of reaction to the antigens. It was concluded that inoculations of the suspension in doses equivalent to 24 and 48 mg. of a humid mass of parasites per animal were insufficient to protect rhesus against infection. Artificial infection was induced on the twelfth postvaccinal day. Immunity as evidenced by serum agglutinin titers of 1:160 and 1:320 did not alter the duration of the incubation period (usually nine to thirteen days). Of 5 monkeys vaccinated after having been previously infected, 4 died. These monkeys as well as the control animals died within periods of twenty-nine to eighty days. In all the animals a histopathologic test was positive. Only 1 vaccine-treated animal was alive after twenty months. Immunity reactions and xenodiagnostic tests indicated that it was still infected. Vaccine inoculation, in the late incubation and early clinical stage, had no influence on the duration of the disease (death twenty to one hundred and twenty days after experimental contamination). Vaccination in the early incubation stage did not give better results. The method of early administration of vaccine (intradermal, subcutaneous, intramuscular and intravenous) made no apparent difference in the results.

Vaccine inoculation may determine a negative phase as revealed by lower agglutinin concentrations in the serums of treated animals as compared to control animals. Agglutinin concentrations tend to increase after treatment is terminated. Inoculation of the suspension in persons free from infection due to T. cruzi caused formation of agglutinins in varying titers, depending on the method of administration (intradermal 1:320, intravenous 1:1,280). Vaccinotherapy in 2 human cases of trypanosomiasis in the early chronic stage did not cure. One patient still exhibited a positive reaction to xenodiagnostic and immunologic tests at three months and the other, one year after beginning the treatment.

Uterine Myoma and Arterial Hypertension

Drs. A. Wolff Netto, José Hamermesz and Nicolao A. Salum, Department of Gynecology, University of São Paulo, published a statistical study on the relationship between uterine myoma and arterial hypertension. The study included 198 patients with uterine myoma and 120 with minor affections of the genital apparatus without apparent effect on the circulatory system. Tumors with nodules about the size of a lemon were called small. Tumors about the size of a large fist or a fetus's head were called medium. Tumors described as about the size of an adult's head or larger were called large. Analysis disclosed a higher incidence of uterine myomas in colored patients than in white patients. There was no significant difference between the average systolic pressure for the white myomatous patients and for the white patients of the control group. It was particularly interesting that a much higher blood pressure occurred in colored myomatous patients than in the colored patients of the control group. There was also a significantly higher average blood pressure among the colored myomatous patients than among the white myomatous patients. There was a great and significant correlation between the size of the tumor and the blood pressure: blood pressures above 140 mm. of mercury had the relative frequency of 21.7, 27.9 and 33.4 per cent in myomatous patients with small, medium and large tumors, respectively.

Brief Items

Two valuable medical books have been recently published in Brazil, (1) a monumental volume "History of Leprosy in Brazil," by Dr. H. C. de Souza-Araujo, of the Oswaldo Cruz Institute, Rio de Janeiro, and (2) "Malaria in the Amazonia," by Dr. Djalma Baptista, a practitioner of Manaus, state of Amazonas.

The Brazilian Society of Cancerology, recently founded, elected as members of its first governing board Drs. Alvaro O. de Almeida, Mario Kroeff, A. F. Costa Junior, Amadeu Fialho and Sergio B. de Azevedo.

In 1946, 18,148 newborn babies of Rio de Janeiro received BCG vaccination against tuberculosis. This work was performed by the Ataulpho de Paula Foundation in cooperation with the Department of Health.

V 13
1947

Correspondence

PREVALENCE OR INCIDENCE

To the Editor:—There appears to be considerable variation in use of the terms "prevalence" and "incidence" in the medical and public health literature. The U. S. Public Health Service uses the term "prevalence" to indicate the disease morbidity at a given time, i. e., the number of cases (or per cent of involvement) of the particular disease existing in the population sample being studied. The U. S. Public Health Service uses the term "incidence" to indicate the increment of new cases of the disease under consideration during a specified time interval. The different usage of these two terms can be found in the *U. S. Public Health Reports* **61**:1591, 1946, and others.

This comment is occasioned by the use of the term "incidence" in Queries and Minor Notes on "Amebiasis," THE JOURNAL, August 30, page 1577. It is obvious that the figures given in this discussion are for morbidity (prevalence) and not attack rate.

I would appreciate a statement of the editorial policy of THE JOURNAL relative to the correct usage of these two terms. It is my impression that considerable confusion exists in their written and spoken usage.

LESTER W. BURKET, M.D., Philadelphia.

COMMENT.—"Prevalence" refers to the general occurrence of anything that prevails; "incidence" refers to the range or scope of anything that occurs.—ED.

THE ERADICATION OF TUBERCULOSIS

To the Editor:—In an article in *Collier's* entitled "Let's Wipe Out Tuberculosis" Dublin and Ratcliff state that "Tuberculosis can be stamped out completely, once and for all, within the next twenty years. We've the knowledge and the money, and we can easily build the facilities. The only thing we lack is organization for the all-out attack" (Dublin, L. I., and Ratcliff, J. D.: *Collier's,* Dec. 29, 1945, p. 17). The article further relates that the Metropolitan Life Insurance Company, of which Dr. Dublin is statistician, built a sanatorium at Mt. McGregor for the company's tuberculous employees with a capacity of two hundred beds which was later increased to three hundred and fifty. After thirty years of operation the sanatorium was closed because only twenty-six of its beds were occupied, reduction in the incidence of tuberculosis among the company's almost 50,000 employees being due to early detection through routine chest roentgenograms and immediate isolation at Mt. McGregor. The authors recommend mass roentgenologic chest examinations and more sanatoriums for the tuberculous together with subsidies for the patients' families, a program which, if not entirely original with Dublin and Ratcliff, is none the less praiseworthy and should meet with universal approbation. However, the problem presents another and equally serious aspect. For example, the anatomic unit of tuberculosis is the tubercle. There are at least two views concerning the origin of the tubercle. According to one view, it is primarily a productive interstitial lesion that sooner or later undergoes necrosis and ruptures into an air vesicle, producing a cavity which communicates with the external air. According to another view, the tubercle is primarily an acute exudative vesicular pneumonitis in which necrosis of the exudate completes the formation of a cavity that communicates with the outer air. In either event, the cavity at first is of slightly more than microscopic dimensions. From this point onward the safety of the patient depends on whether the process of destruction or of repair assumes and maintains the ascendancy. In the meantime, tubercle bacilli are discharged, other persons are infected and the disease is perpetuated.

It is conceivable that a cure for tuberculosis will be found. It is inconceivable that the disease will ever be eradicated. The seedbed, although it may be greatly reduced, will always remain as a focus for the propagation and dissemination of tubercle bacilli. To anticipate the discovery during life of the nearly microscopic tuberculous cavity is expecting too much of man's diagnostic acumen. Until the cavity is detected and controlled the disease will be spread by innocent and unknowing harborers of tubercle bacilli and will continue to exist no matter how efficacious curative measures may be in individual patients. Without eradication of the seedbed it is obvious that there can be no eradication of tuberculosis. Because every tubercle is a miniature seedbed it follows that tuberculosis cannot be eliminated until the last tubercle is destroyed. These considerations seem not to have been taken into account by Dublin and Ratcliff.

DOUGLAS SYMMERS, M.D., New York.
General Director of Laboratories,
Department of Hospitals.

Medical Motion Pictures

LOAN OF U. S. ARMY MEDICAL DEPARTMENT FILMS

In the Aug. 17, 1946 issue of THE JOURNAL information with regard to the loan of U. S. Army Medical Motion Pictures was published. This procedure has been changed, and all requests for medical motion pictures should now be directed to the Army Surgeons of the Army area in which the requesting institution or individual is located.

Surgeon, First Army, Governors Island, N. Y.: Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey and Delaware.

Surgeon, Second Army, Fort Meade, Md.: Indiana, Ohio, Pennsylvania, Virginia, West Virginia, Maryland and Kentucky.

Surgeon, Third Army, Atlanta 3, Ga.: Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama and Mississippi.

Surgeon, Fourth Army, Fort Sam Houston, Texas: Texas, New Mexico, Oklahoma, Arkansas and Louisiana.

Surgeon, Fifth Army, 1660 East Hyde Park Boulevard, Chicago: Illinois, North Dakota, South Dakota, Minnesota, Iowa, Wisconsin, Michigan, Wyoming, Nebraska, Colorado, Kansas and Missouri.

Surgeon, Sixth Army, Presidio of San Francisco: California, Washington, Montana, Idaho, Oregon, Nevada, Utah, Arizona.

The Surgeon will approve or disapprove the request based on the recognized professional standing of the individual or institution asking for the loan of films and will forward the request to the Army Central Film Library for necessary action.

The present policy of restricting these films for showing by/to institutions, groups or individual members of the medical profession and allied scientific groups who are bound by professional ethics is to be continued.

FILM REVIEW

Tatooing with Mercury Sulfide for Intractable Pruritus Ani and Vulvae. 16 mm., color, silent 400 feet, showing time sixteen minutes. Prepared in 1942 (revised in 1946) by Robert Turell, M.D. Procurable on loan from the author, 876 Park Avenue, New York.

An excellent presentation of one specific method to deal therapeutically with intractable pernicious pruritus of the anal and perianal and vulvar regions. The method of tatooing these areas is well presented by means of an ingenious instrument. The clinical picture as it appears before and after tatooing is well demonstrated.

The simple technic of tatooing is adequately illustrated. The author uses photomicrographs to illustrate the deposits of tatooing. The statistical evaluation based on 70 cases extending over a period of twenty years seems to bear out the contention of the author about the value of this method in well selected cases.

The picture is recommended to be shown for proctologists, gynecologists and dermatologists. The photography is excellent except for the final two or three titles, which are poorly done.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Chiropodist Practice Acts: Death of Patient Following Administration of Sodium Pentothal as Manslaughter.—The defendant was convicted of manslaughter and appealed to the Supreme Court of Wyoming.

At about 4:45 p. m. on the day in question the defendant, a licensed chiropodist, injected 3 cc. (0.15 Gm.) of a 5 per cent solution of "sodium pentothal" into a vein in a patient's left wrist to anesthetize him so as to reduce a dislocated shoulder. There was some dispute as to whether the injection took three seconds or thirty seconds. At 5:15, according to the defendant, the patient became cyanotic, and by 5:30 the cyanosis had progressed to such a stage that the defendant became alarmed for his patient's life. He made several phone calls and finally reached Dr. Ketchum, who arrived about 6 p. m. No stimulants or artificial respiration had been given prior to that time. The patient's heart was then beating weakly, and his voluntary and reflex respiration had stopped. Subsequent efforts to revive the patient by means of artificial respiration, pulmotor, picrotoxin and epinephrine ("adrenalin") were of no avail and the patient's heart ceased to beat some time between 6:45 and 7 p. m. A postmortem examination was made the next day, and the cause of death was given as respiratory failure with coronary sclerosis, moderate.

The report of the case reveals a considerable conflict between the evidence furnished by the two physicians who testified for the defense and the five physicians who testified for the prosecution, much of the conflict concerning itself with the strength of the solution, the length of time it took to make the injection (witnesses for the prosecution thought there was too rapid a concentration of sodium pentothal in the blood stream), and the interval of time during which death from the sodium pentothal could have occurred, (witnesses for the defendant said death due to sodium pentothal would occur not more than ten minutes after the administration).

In one of its instructions the trial court embodied the statute defining the practice of medicine, including therein the provision (which defendant wanted brought to the attention of the jury) that such statute shall not be construed to prohibit gratuitous service in the case of an emergency. In another instruction the court defined chiropody. The giving of these two instructions was assigned as error because the defendant was not charged with violating either the medical practice act or the chiropody practice act. Chiropody is defined as a treatment of the feet, a number of limitations being stated as to what a chiropodist may do. Among other things, the statute provides that it must not be construed to "confer the right to use any anesthetic other than local." That is equivalent, we think, said the court, to a provision that a chiropodist must not give a general anesthetic. Counsel for the defendant contend that this provision has no application in the case at bar since defendant was not, in trying to set the shoulder, acting as a chiropodist, but merely acting as an individual. To strengthen this contention, counsel asserted that "there is no provision under the Wyoming law against a layman giving a general anesthetic" and, in fact, asked the court to give an instruction to that effect, which the court refused to do. We are not prepared to agree with defendant's contention, said the Supreme Court. As already indicated, the act regulating chiropody in effect says that a man who has only the limited education of a chiropodist in the treatment of human ailments—and he has some—is not competent to give a general anesthetic. Then to assert that the law meant to open the door to every person as an individual to give a general anesthetic, whether or not he has any education at all in the treatment of human ailments, sounds rather inconsistent. The fact that a chiropodist may not administer a general anesthetic clearly indicates that, under our statutes, the administration thereof is intended to be left to a person with greater knowledge of the frailties of the human system. We think we may take judicial notice of the fact that the administration of a general anesthetic may entail danger to a patient. We should hate to be the cause, in whole or in part, of any person finding himself in a plight such as that of the defendant herein as a result of our holding that any one may administer a general anesthetic.

True, continued the Supreme Court, the defendant was not prosecuted for practicing medicine without a license or for violating the statute relating to chiropody, but it would seem that the jury had the right to take into consideration the fact that the defendant was not a licensed physician or surgeon in determining whether or not the defendant was guilty of criminal negligence. For a person who has sufficient knowledge to justify expectation of success to undertake to cure human ailments is one thing; for a person without sufficient knowledge to do so is another. Hence the jury was, we think, entitled to know that the defendant was not a licensed physician or surgeon. If the defendant practiced medicine without a license and if his treatment was with criminal negligence and if the death of his patient ensued as the result thereof, he would be guilty of manslaughter.

The judgment of the trial court was reversed on other grounds, however, and the cause remanded for a new trial.—*State v. Catellier, 179 P. (2d) 203 (Wyo., 1947).*

Malpractice: Burns from Hot Water Bottles—Application of Res Ipsa Loquitur.—The plaintiff sued the defendant hospital and others for damages from burns allegedly caused by the defendant's negligent treatment and lack of care. From an adverse judgment the defendant appealed to the Supreme Court of Nevada.

The plaintiff entered the defendant hospital for the birth of a child. Prior to her being taken to the delivery room and placed under an anesthetic her left leg was entirely normal in all respects. During her absence from her room two hot water bottles had been placed in her bed to warm it. After her return and while she was still unconscious and was having dextrose administered intravenously, she began to move and moan and the nurses asked her husband to try to keep her quiet. Her left leg became uncovered and the husband observed a large red area to which he called the nurse's attention. She examined the area, applied a bandage thereto, and removed a hot water bottle from the bed. Another nurse later removed another hot water bottle from the bed. The coverings wrapped and pinned on these bottles had come off of one of them. The physician did not think the injury could have been an ether burn or a burn from the pressure of the stirrups in the delivery room. In fact the physician said, "Frankly, I am stumped, I don't know what it is." It was six months before the affected area responded to treatment and became covered with new skin, and the plaintiff has a scar that will be permanent.

The plaintiff predicated her claim for damages entirely on the injury to her leg after she was returned to her room from the delivery room. Her theory of her right to recover damages is based on the fact that the burn, wound or other injury to her leg was the result of a lack of the due care to which she was entitled in her care and treatment by the physicians and hospital employees after the birth of her child; that when she entered the hospital her leg was in all respects normal and that the damage was to a well and healthy portion of her body entirely independent of the purpose of her medical treatment and hospitalization. Under these circumstances, she insisted that she was entitled to the application of the doctrine of res ipsa loquitur, and therefore was not required to prove any specific acts of negligence on the part of the defendants. The defendants, on the other hand, insisted that specific acts of negligence must be alleged and proved and that the doctrine of res ipsa loquitur does not apply.

The Supreme Court quoted at length from 38 Am. Jur. 989, concerning the definition and application of the doctrine of res ipsa loquitur. Among other things this quotation says: "The res ipsa loquitur doctrine is based in part upon the theory that the defendant in charge of the instrumentality which causes the injury either knows the cause of the accident or has the best opportunity of ascertaining it, and that the plaintiff has no such knowledge, and therefore is compelled to allege negligence in general terms and to rely upon the proof of the happening of the accident in order to establish negligence. The inference which the doctrine permits is grounded upon the fact that the

V 13
1947

chief evidence of the true cause, whether culpable or innocent, is practically accessible to the defendant but inaccessible to the injured person." The Supreme Court then cited a California case (*Meyer* v. *McNutt Hospital*, 173 Cal., 156, 159 P. 436) in which the plaintiffs sued on account of injuries caused, as alleged, by the carelessness of defendant's employees in allowing Bessie Meyer to be badly burned on the legs by a hot water bottle while she was unconscious from the effects of an anesthetic administered to her before a surgical operation. Among other things the California court in that case said: "The doctrine of res ipsa loquitur is properly applied to the facts in this case. The patient was unconscious. Under its contract with her the defendant corporation owed her a duty of protection which was violated by the use of an instrumentality which produced the painful results which were made manifest when she came out from the influence of the anesthetic. The proof of the accident carried with it the presumption of negligence . . . and this is the rule whether the liability be ascribed to the carelessness of experienced nurses or to defendant's negligence in selecting nurses who were not competent."

The Supreme Court therefore concluded that the trial judge was correct in instructing the jury on the doctrine of res ipsa loquitur and that the defendant's assertion of lack of proof of any acts of negligence was without weight. Other contentions of the defendant on appeal were also overruled and the judgment in favor of the plaintiff was affirmed.—*Los Vegas Hospital Association, Inc., v. Gaffney, 180 P. (2d) 594 (Nev., 1947).*

Medical Practice Acts: Revocation of License for Criminal Abortion; Proof of Pregnancy Necessary.—The plaintiff physician was accused of being guilty of "unprofessional conduct" as defined by the medical practice act in that he advised a certain woman that she was pregnant, that she could not successfully bear a child and that she could be treated only by the performance of an abortion, which he proposed to perform, whereas in fact said woman was normal and could successfully give birth to a child. The pertinent section of the medical practice act involved provides: "The words 'unprofessional conduct' as relating to the practice of medicine, or any other system of treating human ailments, or the practice of obstetrics, are hereby defined to include: (1) Procuring, or aiding in or abetting, or offering or attempting to procure or aid in or abet the procuring of, a criminal abortion."

A board of physicians heard the complaint against the plaintiff, found him guilty of "unprofessional conduct" and recommended that his license to practice medicine be revoked. Pursuant thereto the Director of Registration entered an order revoking the plaintiff's license, which order was affirmed by the district court. Accordingly the plaintiff appealed to the Supreme Court of Utah.

The complaining witness consulted the plaintiff physician relative to a suspected pregnancy. After an examination, the plaintiff stated that he was unable to tell whether or not she was pregnant but that he would give her a test, consisting of a series of three daily injections, which would enable him to definitely determine her condition. He advised her that, if the test proved that she was pregnant, he would perform an abortion on her because on account of her physical build she would not be able to successfully give birth to a child. Before completing the three day test, the complaining witness visited another physician, who told her that there was no physical malformation which would prevent her from bearing a child, but that he, also, could not tell for certain whether or not she was pregnant. It subsequently developed that the complaining witness was not pregnant at the time she consulted either the plaintiff or the subsequent physician.

The plaintiff contended that, even if all the evidence adverse to him were taken as true, the facts were insufficient to find him guilty of "unprofessional conduct" since it was definitely established that the woman was not pregnant at the time the purported offer to commit an abortion was made. Unless she were pregnant at that time, he argued, it would have been impossible to procure, aid, or abet or offer or attempt to procure a criminal abortion on her. The criminal statute relating to abortion states: "Every person who provides, supplies or administers to any pregnant woman, or procures any such woman to take, any medicine, drug or substance, or uses or employs any instruments or other means whatever, with intent thereby to procure the miscarriage of such woman, unless the same is necessary to preserve her life, is punishable by imprisonment in the state prison not less than two nor more than ten years." The Supreme Court said that under the provisions of this statute a material element of the crime of abortion is the pregnancy of the woman. The respondent, Department of Registration, admitted that a person cannot be convicted of abortion unless the woman on whom the crime is attempted or performed is pregnant at the time, but argued that the proceeding to revoke the plaintiff's license is not a criminal proceeding and that he was not accused of having committed a criminal abortion but only with attempting to procure the commission of a criminal abortion. In an attempt to commit a crime, said the respondent, it is not necessary that all elements exist which would permit the execution of the crime provided the person charged is not aware that the crime is impossible of completion.

The Department of Registration, said the court, has not cited, nor have we been able to find, any case where under a statute similar to ours it has been held that it is not necessary that pregnancy be proved in order to find an accused guilty of a criminal abortion or of an attempt to commit that crime. If there can be no criminal abortion or attempt to commit such crime unless the woman is pregnant it cannot be said that the offer to perform such an act on such a woman who is not pregnant is sufficient to prove a doctor guilty of "unprofessional conduct." Since the "unprofessional conduct" of which the plaintiff was accused was the offering to procure an abortion and since the proof was uncontroverted that the offer was made to a woman who was not pregnant there was, concluded the Supreme Court, insufficient proof to find the plaintiff guilty of the offense charged. Accordingly the judgment affirming the order revoking the plaintiff's license was reversed.—*Sherman v. McIntyre, 179 P. (2d) 796 (Utah, 1947).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Nov. 1, page 595.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part III.* New Haven, Jan. 7-9; New York, Jan.; San Francisco, Dec. 16-18; Washington, Nov. 11-13. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I. Written.* Various Centers, Feb. 6. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I.* April-May. Applications are accepted for the next examination until Jan. 15, 1948. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, June 16-19. Final date for filing application is Feb. 1. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PEDIATRICS: Dallas, Dec. 5-7. Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Robert H. Ivy, 1930 Chestnut St., Philadelphia.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* May 1948. Final date for filing application is Feb. 15. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, June 1948. Final date for filing application is March 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia 2.

AMERICAN BOARD OF UROLOGY. *Written.* Various Centers, Dec. 6. Final date for filing application is Nov. 15. *Oral Clinical.* Chicago, Feb. 14-18. Final date for filing application is Nov. 15. Sec., Dr. Harry Culver, R. #13, Sunnyside Road, Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Journal of Ophthalmology, Cincinnati

30:955-1060 (Aug.) 1947

Angioid Streaks: Clinical and Histopathologic Study. B. A. Klien. —p. 955.
Surgical Technic of Corneal Transplantation in Rabbits: Discussion of Problems Encountered and Suggestions for Solution. F. C. Stansbury and J. A. C. Wadsworth.—p. 968.
*Substitution of Cerebrospinal Fluid for Vitreous Clouded with Opacities. M. H. Fritz.—p. 979.
Sodium Sulfacetimide: Use in Treatment of Certain Diseases of Eye. W. L. Benedict and J. W. Henderson.—p. 984.
Antitoxin Treatment of Staphylococcic Corneal Ulceration. J. H. Allen. —p. 987.
Medical Assistance at Professional Level. P. Heath.—p. 992.
Use of Furmethide in Comparison with Pilocarpine and Eserine for Treatment of Glaucoma. Ella U. Owens and A. C. Woods.—p. 995.
Cephalosporium Keratitis. A. J. Bedell.—p. 997.
Further Research on Pannus Follicularis Trachomatosus. C. Pascheff. —p. 1001.
Place of Peripheral Fusion in Orthoptics. H. M. Burian.—p. 1005.

Substitution of Cerebrospinal Fluid for Clouded Vitreous.—Fritz reviews the literature on the therapeutic efforts made in this condition, giving especial attention to Hegner's report in 1929 on the replacement of the cloudy vitreous by cerebrospinal fluid. The cases of 4 patients on whom this operation was performed are reported. The youngest patient, aged 13 years, whose vitreous hemorrhage followed trauma, presented the most remarkable case in that one year after an ocular contusion, vision was improved from light projection to 20/20-1. The three other patients, whose ages were in the late fifties and who had had spontaneous retinal hemorrhages into the vitreous, showed no improvement in vision following this procedure. These experiments are admittedly inconclusive because of the short period of postoperative observation, but it is considered that the substitution of cerebrospinal fluid for cloudy vitreous is practical.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

58:129-266 (Aug.) 1947

*Epidemic of Inhalation Lead Poisoning with Characteristic Skeletal Changes in Children Involved. G. Cooper Jr.—p. 129.
*Soft Tissue Changes in Early Acute Osteomyelitis. G. J. Baylin and J. C. Glenn Jr.—p. 142.
Roentgen Evaluation of Lesions of Carpus. F. F. Ruzicka and G. W. Heublein.—p. 148.
Medial Femoral Triangle of Translucency Simulating Osteochondritis Dissecans. J. C. Weisman.—p. 166.
Metastatic Carcinoma of Hypophysis Cerebri. C. W. Schwartz.—p. 168.
Planigraphy: III. Evaluation of Method in Diagnosis of Cancer of Lower Respiratory Tract. J. R. Andrews and R. O. Turek.—p. 173.
War Wounds of Chest: Roentgenologic and Surgical Considerations. H. L. Jaffe and J. P. O'Connor.—p. 183.
Herniation of Gastric Mucosa into Esophagus: Case Report. Josephine Wells.—p. 194.
Right-Sided Thoracic Stomach. J. G. Teplick and S. H. Macht.—p. 196.
Common Peculiarities of Patients with Adenocarcinoma of Endometrium, with Special Reference to Obesity, Body Build, Diabetes and Hypertension. W. T. Moss.—p. 203.
Roentgen Tube Potentials in Diagnostic Roentgenology. R. H. Morgan. —p. 211.
The Biologic Measurement of Depth Dose of Roentgen Rays with Lettuce Seedlings. C. I. Bliss.—p. 222.

Inhalation Lead Poisoning with Skeletal Changes in Children.—Cooper stresses that prompt recognition of plumbism in children is more important than in adults, for children react to smaller dosage and more severely. In epidemics of lead poisoning in which both children and adults have been exposed in the same manner and amount, children are uniformly found to be more susceptible, particularly those under 4 years of age. The author discusses epidemics of lead poisoning resulting from burning discarded battery casings, which were encrusted with lead sulfate and lead peroxide. The leaky cookstoves in which they were used permitted volatilized lead to escape with the smoke into the congested rooms of the homes and apartments of poor persons. The author thinks that until the disposal of discarded battery casings is regulated by law outbreaks of poisoning due to the inhalation of lead will continue to occur. In times of economic distress and fuel shortage casings will be used for fuel in spite of their disagreeable odor while burning. Whether absorption of lead is from the respiratory or gastrointestinal tracts, the roentgen changes are identical. Roentgenographic evidence of skeletal deposits, even with daily absorption, does not appear in less than three months from inhalation poisoning. The time should be longer in cases of lead ingestion—probably about six months. Toxicity may precede demonstrable skeletal changes. Gray or black stains on the necks of the teeth of children, especially the upper incisors, should arouse suspicion of lead poisoning. The skeleton of children should be examined roentgenographically in the presence of such stains; of evidence of increased intracranial pressure or meningeal irritation of uncertain cause; of gastrointestinal disturbance of uncertain cause, or of obscure muscular pains or weakness.

Soft Tissue Changes in Acute Osteomyelitis.—Baylin and Glenn state that during the routine roentgen studies of acute osteomyelitis the emphasis has always been on the osseous lesions, so that other significant changes have received scant attention. Changes are manifest in the soft parts surrounding the involved bones and are at times present within a matter of hours after the onset of infection of the bone. The changes are manifested as lines of increased density in the subcutaneous tissues, loss of the sharply demarcated subcutaneous muscular stripe and loss of the usual intermuscular shadows. The changes may be evident in the roentgenogram even in the absence of clinical evidence of tissue swelling, although after the first forty-eight hours there is usually both clinical and roentgen evidence of enlargement of the soft parts. Perhaps the first roentgen changes are an expression of tissue edema that is subclinical. The authors consider that roentgen studies should be made of the bones as well as of the soft tissue in each case of suspected osteomyelitis.

American Journal of Surgery, New York

74:115-230 (Aug.) 1947

*Fat Necrosis of Female Breast: Report of 110 Cases. F. E. Adair and Jean T. Munzer.—p. 117.
Experiences with Bone Grafting Procedures for Treatment of Battle Casualties and War Injuries. B. B. King.—p. 129.
Treatment of Large Ventral Incisional Hernia. H. A. Pink.—p. 136.
Prevention of Repeated Miscarriage. L. Kurzrok and C. Birnberg. —p. 143.
Art in Nasal Plastic Operation: From Point of View of Rhinologist. L. M. Pearlman.—p. 150.
Closure of Colostomies and Fistulas of Large Bowel. C. S. Hertz and D. H. Poer.—p. 163.
Primary Lymphosarcoma of Stomach: Statistical Summary and Case Report of a Five Year Cure. J. B. O'Donoghue and M. B. Jacobs. —p. 174.
Late Results in Surgery for Decubitus Ulcers. D. E. Barker.—p. 180.
Combination of Sulfanilamide and 9-Aminoacridine as Surgical Antiseptic. S. D. Spotts.—p. 183.
Prevention of Adhesions in Right Colonic Gutter Following Right Colonic Resections. C. Y. Werelius.—p. 187.
Use of Adrenalin to Prolong Spinal Analgesia. S. M. Shane and E. T. Ruiz.—p. 189.
Observations on Early Postoperative Rising. T. F. Keyes.—p. 192.

Fat Necrosis of Female Breast.—The original report on fat necrosis of the female breast was made by Lee and Adair in 1920. Between Jan. 1, 1924 and Jan. 1, 1946, the diagnosis of fat necrosis was made in 136 patients admitted to the breast service of the Memorial Hospital. The authors report on 110 patients in whom the diagnosis was made on the examination of the involved tissue. They feel that there is no basis for retaining the qualifying word "traumatic" in the name of the disease. Trauma, accidental or surgical, is the single most important predisposing factor known. The only difference between the 41 patients who gave a history of trauma and the 69 who did not was the increased incidence of ecchymosis in the

traumatic group. All other clinical signs, gross and microscopic pathologic findings and subsequent course showed no correlation with positive or negative history of trauma. The importance of obesity, either of the subject or of the breasts themselves, is somewhat less than was previously emphasized, although fat necrosis is more apt to occur, with or without preceding trauma, in the overweight group. The commonest and most confusing sign of fat necrosis is attachment to the skin. This was found in 60 per cent of cases. In approximately 45 per cent of the cases fat necrosis resembles cancer; widely differing benign conditions may be simulated in the remaining 55 per cent. Positive diagnosis can be made only by gross and microscopic examination of excised tissue. Fat necrosis of the female breast retains its importance to the clinician because of the remarkable similarity to carcinoma. No woman should be subjected to the mutilating operation of radical mastectomy unless the presence of a malignant tumor has first been proved.

American Review of Tuberculosis, New York

55:477-572 (June) 1947

Veterans Hospitals: Survey That Brought Results (New York Academy of Medicine Study of Veterans Hospitals for Tuberculosis). E. H. L. Corwin.—p. 477.
Tuberculosis in Discharged Soldiers. W. P. Swisher.—p. 481.
Quantitative Tuberculin Test: Significance in Diagnosis of Tuberculosis. C. E. Woodruff.—p. 488.
Tuberculin Patch Test: Screening Procedure to Discover Tuberculin Reactors in Children. I. S. Neiman and E. Loewinsohn.—p. 495.
Cellular Resistance to Pulmonary Tuberculosis and Pulmonary Intravascular Pressure. F. Roder.—p. 498.
Attempted Cavity Closure with Transthoracic Plasma Injection. H. M. Maier and A. Guggenheim.—p. 502.
Research in Tuberculosis. H. S. Willis.—p. 507.
*Apical Scars: Etiological Relationship to Tuberculous Infection. E. M. Medlar.—p. 511.
*Primary and Reinfection Tuberculosis as Cause of Death in Adults: Analysis of 100 Consecutive Necropsies. E. M. Medlar.—p. 517.
*Streptomycin Sensitivity of Tubercle Bacilli: Studies on Recently Isolated Tubercle Bacilli and Development of Resistance to Streptomycin in vivo. G. P. Youmans and A. G. Karlson.—p. 529.
Streptomycin Resistant Strains of Tubercle Bacilli: Production of Streptomycin Resistance in vitro. Elizabeth H. Williston and G. P. Youmans.—p. 536.
Effect of Glycerol and Related Substances on Growth and Oxygen Uptake of Tubercle Bacillus. H. Bloch, E. Matter and E. Suter.—p. 540.
Influence of Sulfasuxidine and Succinic Acid on Tubercle Bacillus. M. Gerundo.—p. 552.
Cultivation of Tubercle Bacilli from Gastric Juice: Study of Factors Affecting Cultivation of Mycobacterium Tuberculosis from Gastric Juice. Vera Vincent and E. A. Birge.—p. 556.

Apical Scars and Tuberculous Infection—Scars at the apex of the lung are generally regarded as healed tuberculous foci, and, since they usually are bilateral, the theory has been advanced that they result from a postprimary hematogenous dissemination of tubercle bacilli. Medlar has been collecting during the past two years in the Medical Examiner's Department of the Borough of Manhattan data relative to the incidence of tuberculous infection in cases of unexpected death and, as part of the study, the location and type of apical scars. Apical scars were observed in 423 of 960 white persons and in 36 of 299 Negroes. The incidence of tuberculous infection was 75.2 per cent and 61.2 per cent, respectively. Apical scars were not observed in 106 persons under 20 years of age. They were present in 275 of 403 white men over 50 years of age, with the lesions being bilateral in 98 per cent. The incidence of tuberculous infection in these two groups was 21.7 per cent and 86.8 per cent, respectively. Apical scars were present with equal frequency in persons who did not exhibit macroscopic evidence of tuberculosis in their tissues and in those who had single or multiple tuberculous foci. Definite evidence was not found to support the theory that bilateral apical scars represent healed tuberculous lesions following a postprimary hematogenous dissemination of bacilli. It appears that typical, bilateral apical scars, sometimes called "apical caps," are not etiologically related to tuberculous infection.

Fatal Primary and Reinfection Tuberculosis in Adults.—Medlar analyzed 100 adult deaths from tuberculosis with reference to the incidence of "primary" and "reinfection" disease on the theory that caseous nodes indicate a progressive primary infection and calcification in lymph nodes, a healed primary infection. The term reinfection is used in the sense that a previous infection had been healed. Thirty-four per cent of the patients died from a primary infection; 28 per cent, from a reinfection. Seventeen per cent had both calcified and caseous nodes. Their deaths may be interpreted as due to a reinfection disease which acted like a primary infection. Twenty-one per cent of the patients had neither caseous nor calcified nodes. They may be regarded as dying from (1) a progressive incomplete primary complex tuberculosis or (2) a reinfection disease in which an incomplete primary complex had healed. The pattern peculiar to phthisis was present in these patients irrespective of the conditions observed in the lymph nodes. It is evident that all cases of progressive pulmonary tuberculosis in the adult cannot be explained on the basis of a reinfection, and it would appear to be equally difficult to explain them on the generally accepted interpretation of the influence of hypersensitivity in reinfection. For the development of progressive pulmonary tuberculosis, that is, phthisis in the adult, it is essential that the tubercle bacillus become lodged in the cephalic portions of pulmonary lobes whether it be a first or a subsequent infection. Beyond this fact all explanations await clarification.

Streptomycin Sensitivity of Tubercle Bacilli.—Youmans and Karlson found it advisable to determine not only the sensitivity of strains of tubercle bacilli isolated from patients before treatment with streptomycin was started but also the range of sensitivity to streptomycin likely to be encountered among recently isolated strains of the organism. The relative sensitivity of human, bovine and avian strains of Mycobacterium tuberculosis to streptomycin was also determined. Isolation of the strains of tubercle bacilli were made chiefly from a large number of patients who had various clinical types of tuberculosis; a few specimens were obtained at necropsy. They observed that the majority of organisms isolated from patients prior to treatment with streptomycin are sensitive in vitro to streptomycin in concentrations of less than 2 micrograms per cubic centimeter of medium. Ninety per cent of one hundred and thirty-one strains studied were inhibited by the drug in concentration of 1.56 micrograms or less per cubic centimeter of a liquid medium which contained 10 per cent horse, beef or human plasma. Bovine strains of tubercle bacilli apparently exhibit the same order of sensitivity to streptomycin as do those of the human type. Avian strains of the organism are somewhat more resistant to the action of streptomycin in vitro than are mammalian strains. Cultures of Myco. tuberculosis isolated from patients after several months or more of treatment with streptomycin exhibit resistance to streptomycin in vitro several thousand times as great as that of culture isolated prior to treatment.

Annals of Western Medicine & Surgery, Los Angeles

1:225-268 (Aug.) 1947

*Diffuse Lepra. M. E. Obermayer.—p. 225.
Repair of High Velocity Fragment Wounds of the Face. P. W. Greeley, M. Gurdin and E. Pound.—p. 232.
*Immediate Ambulation of Celiotomized Patient. C. J. Bellis.—p. 239.
Heparin and Dicumarol in Cavernous Sinus Thrombosis. B. S. Pogorel.—p. 245.
Fatal Reaction from Sulfathalidine. E. M. Stanton.—p. 249.
Recent Advances in Treatment of Cord Bladder. W. C. Cook.—p. 253.
Effect of Climate on Evaluation of Sympathectomy for Peripheral Vascular Diseases. R. J. Popkin.—p. 255.
Proctologic Syndromes of Emotional Origin. D. Miller.—p. 258.

Diffuse Leprosy.—Obermayer warns physicians of the Southwestern states against an uncommon but exceedingly dangerous type of leprosy. The infectiousness and poor prognosis of this form are in sharp contrast to its relative inconspicuousness. Persons who were part of the seasonal labor force imported from Mexico escaped detection of their disease by the Mexican and American health authorities and were later, after their return home, identified as victims of diffuse leprosy. Two types of leprosy can be distinguished: the lepromatous, which has a relatively hopeless prognosis, and the tuberculoid, which generally runs a benign course. Diffuse leprosy is a variety of the lepromatous type; it is characterized by diffuse infiltration of the skin all over the body, and a leprotic reaction in the form of recurrent crops of necrotizing angiectases called erythema necroticans. Though the skin may have a normal appearance, the presence of Mycobacterium leprae can be demonstrated anywhere on the body by means of the scraped incision method. Likewise, neural damage can be revealed on all parts of the skin which is normal in appearance by the histamine test. Symptoms

may differ greatly, but all patients will show a varying degree of alopecia of the eyebrows and eyelashes, and the complement fixation and precipitation tests of their blood serums for syphilis will give biologically false, strongly positive reactions.

Immediate Ambulation of the Celiotomized Patient.—Bellis says that during the past six years immediate ambulation has been encouraged after every celiotomy which he has performed. Only one complication occurred; because of a technical error a subcutaneous hematoma developed within seven hours after an inguinal herniorraphy. Instances of thrombophlebitis, phlebothrombosis, pulmonary embolism, pneumonia or atelectasis were not encountered. Interrupted fine silk suture was used for vascular ligation and closure, except in those wounds in which through and through stainless steel wire was used for closure. The tension on transverse abdominal incisions being minimal, this type of incisions was used almost always. Vertical incisions were avoided because of the well known high incidence of hernias in these incisions. In cases in which the patient was first brought to the author's attention after prolonged preoperative confinement in bed, ambulation was encouraged for a few days preoperatively. The author lists 641 cases in which ambulation was permitted within twelve hours after operation. In 609 of them celiotomy had been performed. Ambulation does not mean sitting or standing. Early ambulation implies walking about the corridors. It includes self toilet, dressing and feeding. Sitting in a chair is permitted only at meal times, but at other times the patient is instructed to walk briskly or to lie in bed. Each patient is told that the regimen is designed to prevent respiratory complications, phlebitis and embolism. Patients with gastric resection are discharged from the hospital on the fifth postoperative day; those after appendectomy, herniorraphy or pelvic surgery are dismissed a day or two after operation. Cholecystectomy patients are discharged two or three days after surgery. The patient returns as an outpatient for removal of the skin sutures. Late wound complications such as dehiscence or hernia have not been observed.

Archives of Dermatology and Syphilology, Chicago

56:143-282 (Aug.) 1947

*Chemosurgical Treatment of Cancer of Face: Microscopically Controlled Method of Excision. F. E. Mohs.—p. 143.

Adenoacanthoma of Sweat Glands: Carcinoma of Sweat Glands with Glandular and Epidermal Elements; Report of 4 Cases. W. F. Lever. —p. 157.

Metastatic Basal Cell Epithelioma: Report of Case. J. C. Amersbach. —p. 172.

*Penicillin in Treatment of Experimental Syphilis of Rabbits. II. Synergistic or Additive Activity of Penicillin, Oxophenarsine Hydrochloride and Bismuth and Potassium Tartrate. J. A. Kolmer.—p. 179.

Pyoderma Gangrenosum in Ulcerative Colitis: Report of Case. Violet L. Kiel.—p. 187.

Reiter's Disease: Comparison with Keratosis Blennorrhagica and with Psoriasis Arthropathica. E. Epstein.—p. 191.

Correlation of Boiling Ranges of Some Petroleum Solvents with Irritant Action on Skin. J. V. Klauder and F. A. Brill Jr.—p. 197.

Cutaneous Diphtheria: Two Unusual Cases with Eruptions Resembling Lymphogranuloma Venereum and Ectodermosis Erosiva Pluriorificialis. F. Reiss.—p. 216.

Eczematous Sensitization: Review of Immunologic Properties and Some Speculations as to Its Nature. A. Rostenberg Jr.—p. 222.

*Neurosyphilis: Treatment Using Penicillin Alone and in Combination with Oxophenarsine Hydrochloride and with Bismuth. H. M. Leavitt. —p. 233.

Sporotrichosis: Report of Case in Which Treatment with Iontophoresis Was Successful. Loren W. Shaffer and H. S. Zackheim.—p. 244.

Lupus Erythematosus Treated with Vasodilators and Colloidal Gold Sulfide. F. R. Schmidt.—p. 248.

Clinical Evaluation of Undecylenic Acid as a Fungicide. E. Muskatblit. —p. 256.

Extragenital Chancre of the Ear. A. S. Ripa and A. G. Bartlett. —p. 264.

Cancer of Face.—Mohs treated 232 patients with basal cell epithelioma and 103 patients with squamous cell epithelioma of the face by the chemosurgical method. The chemical treatment serves to produce fixation of the tissues, so that specimens may be excised for systematic microscopic examination. The patients were followed up for periods of three years or more. Forty-nine of the patients with basal cell epithelioma died of intercurrent disease without evidence of cancer before the expiration of the three year period, and 9 patients were lost from observation. Successful results were obtained in 174 patients with basal cell epithelioma despite the fact that many of the cancers were advanced and over a third had recurred after previous unsuccessful treatment by means of surgical excision, radiation or caustics. Thirty-three of the patients with squamous cell carcinoma died from intercurrent disease or were lost from observation. Successful results were attained in 59 of 70 patients observed for three years or more, even though many of the cancers were advanced; 28 were recurrent after previous treatment and 12 had regional metastases. Successful results were attained in 23 of 28 patients in a five year period of observation. The unprecedented reliability of the chemosurgical treatment of cancer of the face is attained by the systematic control of excision afforded by the technic. The reliability is not a result of an excessively radical approach, since only 1 or 2 mm. of tissue beyond the limits of cancerous invasion need be removed.

Penicillin Treatment of Experimental Syphilis of Rabbits.—Kolmer produced acute syphilitic orchitis in rabbits by inoculation with Treponema pallidum. The intravenous injection of 1 mg. of oxophenarsine hydrochloride per kilogram of body weight (one eighth to one tenth of the single minimal curative dose) reduced the single minimal curative dose of penicillin by intramuscular injection from more than 100,000 units to less than 10,000 units per kilogram in the treatment of the syphilitic orchitis. The intramuscular injection of 2 mg. of oxophenarsine hydrochloride per kilogram in peanut oil and beeswax reduced the single minimal curative dose of penicillin in peanut oil and beeswax from approximately 10,000 units to 2,000 units or less per kilogram. Similar synergistic effects were produced by the simultaneous administration of multiple doses of oxophenarsine hydrochloride by the intravenous route and of multiple doses of penicillin by the intramuscular route. Not only oxophenarsine hydrochloride by intravenous and intramuscular routes but bismuth and potassium tartrate in oil by intramuscular injection have shown decided synergistic or additive therapeutic effects in the treatment of acute syphilitic orchitis of rabbits with penicillin. It is suggested that the optimum therapy for syphilis in human beings may consist of the simultaneous administration of penicillin and oxophenarsine hydrochloride, penicillin and a bismuth and potassium tartrate preparation or a combination of all three compounds.

Neurosyphilis.—Leavitt treated 171 patients with neurosyphilis, mostly asymptomatic, with a single course of penicillin alone or with a course of penicillin combined with oxophenarsine hydrochloride and a bismuth compound. The patients were followed up for periods from three to eighteen months. Control examinations of spinal fluid showed definite improvements in 69.6 per cent and normality in 25.1 per cent. Most of the improvement occurred in the first three months following therapy, and the most rapid improvement was noted in the cell count and in the colloidal mastic test, followed by improvement in the level of total protein. The complement fixation test improved more slowly and to a lesser degree. In only 8 patients did the serologic test for syphilis turn normal. Results were slightly better after treatment with combined arsenic, bismuth compound and penicillin than with penicillin alone. The difference is not sufficient to warrant the additional risks of combined therapy as contrasted with the safety of penicillin alone. Further investigation is needed to establish the permanence of improvement in spinal fluid and the absence of clinical relapses following treatment with penicillin in neurosyphilis. There is sufficient evidence at hand to justify the treatment of asymptomatic neurosyphilis with at least one course, and preferably several courses, of penicillin before resorting to fever therapy.

Archives of Ophthalmology, Chicago

38:1-144 (July) 1947

Present State of Intracapsular Cataract Operation. A. Knapp.—p. 1.

Mycotic Obstruction of Nasolacrimal Duct (Candida Albicans). M. Fine and W. S. Waring.—p. 39.

Field of Vision in Chronic Glaucoma: Comparison of Fields with Full and with Reduced Illumination. S. B. Marlow.—p. 43.

Central Pulverulent (Discoid) Cataract and Its Hereditary Transmission. A. Rados.—p. 57.

Effect of Grenz Rays on Leprous Infiltrations: III. Response of Lesions of Anterior Portions of Eyeball. F. Sagher and B. Miterstein.—p. 78.

Pathologic Study of Ocular Lesions Due to Lewisite (β-Chlorovinyldichloroarsine): Changes With and Without BAL (2,3-Dimercaptopropanol) Therapy. F. H. Adler, W. E. Fry and I. H. Leopold. —p. 89.

V 1
194

Archives of Pathology, Chicago

44: 1-102 (July) 1947

*Studies on Pathogenesis of Rheumatic Fever: I. Experimental Production of Autoantibodies to Heart, Skeletal Muscle and Connective Tissue. P. A. Cavelti.—p. 1.
*Id.: II. Cardiac Lesions Produced in Rats by Means of Autoantibodies to Heart and Connective Tissue. P. A. Cavelti.—p. 13.
Analysis of Cases of Radial Hemimelia. R. O'Rahilly.—p. 28.
*Polycystic Disease of Kidney: Review. P. P. Lambert.—p. 34.
Bovine Leptospirosis: Pathologic Observations on Experimentally Infected Calves. H. Ungar and H. Bernkopf.—p. 59.
Medullary Hyperplasia of Adrenal Gland in Aged Wistar Albino and Gray Norway Rats. Eleanor H. Yeakel.—p. 71.
Tumor of Carotid Body Type Arising in Middle Ear. P. M. LeCompte, S. C. Sommers and F. D. Lathrop.—p. 78.
Arteriosclerosis in Infancy. W. A. Hause and G. J. Antell.—p. 82.
Primary Ovarian Pregnancy. Esther H. Dale.—p. 87.

Pathogenesis of Rheumatic Fever. I and II.—Cavelti showed that when rats are given injections of mixtures of killed group A beta hemolytic streptococci and rat heart, rat skeletal muscle and various preparations of rat connective tissue, autoantibodies to these tissues are formed. The autoantibodies could be demonstrated in vitro with the collodion particle technic and use of extracts of plain homologous tissues. Formation of such autoantibodies to heart has also been demonstrated in some rabbits which were immunized with killed streptococci plus rabbit heart. Microscopic examination of the hearts of the rats in which autoantibodies were produced revealed changes affecting chiefly the valves and the other connective tissue structures of the heart. These changes were apparently the result of the pathogenic action of the autoantibodies. In a broad sense these changes may be considered to resemble those of rheumatic fever.

Polycystic Disease of Kidney.—Lambert studied the structural alterations in the nephrons of the polycystic kidney in graphic reconstructions of 2 cases of polycystic disease of the newborn and 5 cases of polycystic disease of the adult. The cysts of the newborn were observed as closed cavities consisting of distended nephrons isolated from the pelvis. The adult type of the polycystic disease showed glomerular cysts, which appeared as closed cavities, and tubular cysts which had developed in the course of the nephrons. Examination of the cystic nephrons in serial sections and in their reconstructed continuity showed that most of them were completely developed and connected in the usual way with the collecting tubules, and that these opened freely into the pelvis. The tubular cysts appeared in the course of the proximal convoluted tubules, in Henle's loops, in the distal convoluted tubules and also in the medulla along the course of the collecting tubules. The morphologic study of the structure as well as the physiologic examination of the functional ability of the cystic nephrons of the adult (by determining the composition of the fluid which may be collected from the cyst and also by observing the amounts of inulin appearing in the cyst after intraperitoneal injection) suggest that the cystic nephrons of the adult take part in the formation of urine. The cystic nephrons of infantile kidneys appeared as closed systems isolated from the pelvis of the kidney. As a result the infant dies promptly, while the adult survives often to late middle age, the cystic open nephrons still being able to provide for the formation of urine when the neighboring noncystic parenchyma has been destroyed either by the enlarging cysts or by the development of sclerotic tissue.

Archives of Surgery, Chicago

55: 1-100 (July) 1947

*Copper Sulfate Method for Rapid Estimation of Whole Blood Requirements. J. C. Edwards.—p. 1.
*Total Gastrectomy. H. K. Ransom.—p. 13.
Recent Advances in Vascular Surgery: Review of Literature. R. A. Deterling Jr.—p. 31.
Osteotomy in Treatment of Fractures of Hip. E. Asbury.—p. 51.
*Treatment of Localized Infections with Penicillin Infiltration. F. K. Inui.—p. 58.
Progress in Orthopedic Surgery for 1945: XIX. Conditions Involving Elbow, Forearm, Wrist and Hand. W. C. Graham.—p. 64.
Id.: XX. Conditions Involving Spine and Thorax, Exclusive of Those in Lower Part of Back. J. R. Cobb.—p. 76.
Id.: XXI. Conditions Involving Lower Part of Back. R. Beverly Raney.—p. 87.

Copper Sulfate Method for Rapid Estimation of Whole Blood Requirements.—Edwards used a copper sulfate specific gravity method to determine hemoglobin and hematocrit values as well as concentration of total proteins in 166 patients with severe orthopedic injuries. The values obtained were observed to check closely with determinations obtained by more orthodox methods. Blood needs could be readily calculated on a basis that 500 cc. of whole blood increased the hemoglobin 0.9 Gm. An average of 2,360 cc. of whole blood was required during a four day preoperative and a two week postoperative period. In 98 patients with soft tissue wounds of the extremity, the abdomen or the chest an average of 1,470 cc. of whole blood was required per patient during a similar period. When admitted to the hospital, half of all the patients had hemoglobin values below 12 Gm. and total protein values below 6.6 Gm., and 69 per cent of the patients had hematocrit readings below 40. Changes in these values, particularly before and after treatment, proved of even greater value than the initial measurement. The copper sulfate specific gravity method of determining hemoglobin, hematocrit and total proteins with the use of a line chart proved to be simple, yet accurate enough for clinical use.

Total Gastrectomy.—Ranson performed complete gastric resection by the abdominal route in 60 patients, 41 men and 19 women between the ages of 30 and 81 years, during the period of October 1937 to October 1946. There were 14 operative deaths. Fifty-three patients were operated on for carcinoma, 4 for gastric ulcer, 2 for lymphosarcoma and 1 for neurofibroma. General peritonitis was the most frequent cause of death and the commonest source of it was leakage at the site of the esophagojejunal anastomosis. Of the 46 patients who survived the operation, 31 have subsequently died. In all instances death was due to recurrence of the malignant disease. The average duration of life in this group was ten and one-half months. Eleven patients are still living after operation for carcinoma. Approximately one half of these were operated on too recently for evaluation of the result. Three patients may be classified as representing five year cures. All the patients with benign lesions who survived operations are living and maintain a satisfactory state of nutrition. In 2 patients the classic picture of pernicious anemia developed approximately five years after operation.

Penicillin Infiltration for Infections.—Inui treated 12 patients with carbuncles, furuncles and cellulitis by regional infiltration with penicillin. A solution of penicillin in isotonic sodium chloride was made with 10,000 to 50,000 units of penicillin per cubic centimeter. Injections were made once a day. As much as 200,000 units can be infiltrated at any one time into the subcutaneous tissues about an infection without causing toxic reactions or sloughs. Total disability was greatly reduced, and the deformities that result from surgical incision or excision were avoided. Inflammatory pain was quickly relieved after infiltration, and this relief was generally permanent after the first or second treatment. Infiltration is moderately painful. However, the pain does not last more than ten to twenty minutes if the penicillin solution contains 0.5 per cent procaine hydrochloride.

Cincinnati Journal of Medicine

28:453-516 (July) 1947

Endocrine Therapy in Obstetrics and Gynecology. H. F. Traut.—p. 453.
Historical Justification for Training and Licensing of Practical Nurses. Mable I. Darrington.—p. 474.

28:517-574 (Aug.) 1947

Rehabilitation: Third Phase of Medical Care. H. A. Rusk.—p. 517.
Metopon Hydrochloride: (Methyldihydromorphinone hydrochloride). W. C. White and others.—p. 525.

Delaware State Medical Journal, Wilmington

19:129-148 (July) 1947

Chronic Shigellosis Due to Shigella Sonnei: Case Report. E. R. Miller and E. G. Scott.—p. 129.
Cardiac Dysfunction with Severe Anemia. J. R. Durham.—p. 132.
Experimental Transplantation of Ovarian Tissue Into Testis Capsule Following Orchic Parenchymectomy. B. S. Vallett.—p. 138.
Clinical Use of Streptomycin. H. F. Flippin.—p 140.
Does it Pay to Work Harder? W. I. King.—p. 144.

19:149-166 (Aug.) 1947

Common Problems of Medical Practitioner and Specialist in Diagnosis and Treatment of Gynecologic Disease. T. L. Montgomery.—p. 149.
Theoretical and Practical Aspects of Problems of Human Sterility. O. J. Pollak.—p. 157.
Cancer Control: Detection Center. J. F. Hynes.—p. 163.

Georgia Medical Association Journal, Atlanta

36:251-286 (July) 1947

Postpartum Hemorrhage and Shock. R. D. Mussey.—p. 251.
Ringworm of Scalp—Epidemic in Georgia. W. L. Dobes.—p. 259.
Treatment of Thermal Burns. J. L. Mays.—p. 263.
Diagnosis and Treatment of Breast Cancer. J. W. Landham Jr.—p. 268.

Journal of Clinical Investigation, Boston

26:591-826 (July) 1947. **Partial Index**

Dimensional, Osmotic and Chemical Changes of Erythrocytes in Stored Blood: 1. Blood Preserved in Sodium Citrate, Neutral and Acid Citrate Glucose (ACD) Mixtures. S. Rapoport.—p. 591.
Osmotic Resistance (Fragility) of Human Red Cells. A. K. Parpart, P. B. Lorenz, Ethel R. Parpart, J. R. Gregg and A. M. Chase. —p. 636.
Estimation of Cell Survival After Transfusion by Selective Agglutination. Dorothy E. Osborne and O. F. Denstedt.—p. 655.
Preservation of Whole Blood. M. M. Strumia, A. D. Blake Jr. and W. A. Wicks.—p. 667.
*Acid Citrate Dextrose Solution with Low Water Volume and Low Dextrose Concentration. M. M. Strumia, A. D. Blake Jr. and J. J. McGraw Jr., with technical assistance of Margaret Dolan and Louise Colwell.—p. 678.
In Vitro Preservation and Posttransfusion Survival of Stored Blood. J. F. Ross, C. A. Finch, W. C. Peacock and M. E. Sammons.—p. 687.
Measurement of Posttransfusion Survival of Preserved Stored Human Erythrocytes by Means of Two Isotopes of Radioactive Iron. J. G. Gibson II, J. C. Aub, R. D. Evans, W. C. Peacock, J. W. Irvine Jr. and T. Sack.—p. 704.
Antitularense Serum: Correlation Between Protective Capacity for White Rats and Precipitable Antibody Content. L. Foshay, I. Ruchman and P. S. Nicholes.—p. 756.
Role of Pepsin, Peptic Inhibitory Substances and Hydrochloric Acid in Normal Subjects and in Production of Peptic Ulcers. H. H. Le Veen and L. Hallinger.—p. 761.
Tolerance for Potassium in Severe Renal Insufficiency: Study of 10 Cases. N. M. Keith and A. E. Osterberg.—p. 773.
Effects of Vagotomy on Physiology of Stomach in Patients with Peptic Ulcer. J. S. Clarke, E. H. Storer and L. R. Dragstedt.—p. 784.
Metabolic Alterations Following Thermal Burns: VII. Effect of Force-Feeding, Methionine and Testosterone Propionate on Nitrogen Balance in Experimental Burns. Frieda L. Meyer, J. W. Hirshfeld and W. E. Abbott.—p. 796.
Biliary Excretion of Various Bile Acids by Patients with Choledochostomy Drainage, and Effect of Oral Administration of Desiccated Bile of Ox and Hog. C. G. Johnston and J. L. Irvin.—p. 802.
Effect of Glycine on Production and Excretion of Uric Acid. M. Friedman.—p. 815.
Electrophoretic Analysis of Ante- and Postmortem Serum in Different Diseases. P. P. Cohen, F. L. Thompson and G. A. Nitshe Jr.—p. 820.

An Acid Citrate Dextrose Solution.—Strumia and his associates propose an acid citrate dextrose solution which has given good results for preservation of whole blood and yields a good stable plasma. The formula is as follows: Sodium citrate (trisodium, dihydric) 1.6 Gm.; citric acid (monohydric) 0.56 Gm.; dextrose (anhydrous) 1.5 Gm., and water 75 cc. The p_H of this solution is 4.8, and the p_H of the resulting plasma varies from 7.05 to 7.45. This acid citrate dextrose solution has a smaller volume and a lower dextrose concentration than solutions previously used. This solution has proved entirely satisfactory in practical use in over five thousand collections of blood.

Journal of Lab. and Clinical Medicine, St. Louis

32:931-1044 (Aug.) 1947

Method of Determining Specific Renal Functions of Glomerular Filtration, Maximal Tubular Excretion (or Reabsorption) and "Effective Blood Flow" Using a Single Injection of a Single Substance. M. Landowne and A. S. Alving.—p. 931.
*Radioactive Phosphorus, P^{32}: Six Year Clinical Evaluation of Internal Radiation Therapy. C. A. Doan, B. K. Wiseman, C. S. Wright, J. H. Geyer, W. Myers and J. W. Myers.—p. 943.
Folic Acid in Maintenance of Pernicious Anemia. R. W. Heinle, Janet T. Dingle and A. S. Weisberger.—p. 970.
Peritoneal Irrigation in Treatment of Renal Failure Due to Transfusion Reaction. H. R. Robertson and P. S. Rutherford.—p. 982.
*Peritoneal Irrigation for Acute Renal Damage Following Incompatible Blood Transfusion: Discussion Based on 3 Cases. E. E. Muirhead, A. B. Small, A. E. Haley and J. M. Hill.—p. 988.
Serum Proteins in Acute Infections. R. S. Stacey.—p. 1002.

Internal Radiation with Radioactive Phosphorus, P^{32}.—Doan and his associates report on the first 100 patients treated with radioactive phosphorus, P^{32}. Radioactive phosphorus was found to be of greatest value in controlling the clinical and hematologic manifestations of polycythemia rubra vera. Radioactive phosphorus is a valuable adjunct to other treatment in certain of the more chronic leukemic states, particularly in patients intolerant of or resistant to roentgen radiation. Although internal radiation therapy may cause an occasional brief favorable effect in the acute leukemias, all too frequently radioactive phosphorus has appeared to accentuate the clinical acuteness of the leukemic process; it has never proved permanently beneficial. Radioactive phosphorus has failed to control Hodgkin's syndrome and may threaten the integrity of the marrow unless great care and discretion are observed in the dosages used. The deep bone pain which characterizes metastases to bone may be relieved by radioactive phosphorus. The evidence as to specific retardation of the lesions remains questionable. Pruritus secondary to leukemia cutis, polycythemia rubra vera and exfoliative dermatitis has been effectively controlled by radioactive phosphorus therapy in selected instances. It must be emphasized that the efficacy of this treatment depends on selective destruction of cells. There is a wide variance in individual susceptibility and tissue response. Extreme care in administering internal radiation therapy is essential. Dosage must be carefully adjusted. Experience suggests small, well spaced doses of radioactive phosphorus with frequent, careful and complete blood and bone marrow studies to insure the integrity of normal hematopoiesis during this treatment.

Peritoneal Irrigation for Renal Damage Following Incompatible Blood Transfusion.—Muirhead and his associates employed peritoneal lavage in 3 cases of renal insufficiency resulting from incompatible blood transfusion. The results were disappointing because, although substantial quantities of urea (and presumably other waste products) were cleared from the body, two major complications, accentuation of acidosis and the absorption of water and salts from the peritoneum, seemed related to the use of crystalloid solutions for irrigation. Such complications are considered deleterious to the progress of these patients during the renal insufficiency phase and may retard the onset of diuresis. In contrast an outlined three phase regimen seems to oppose these particular complications. Diffuse peritonitis was absent in 2 patients examined post mortem. Presumably penicillin and streptomycin therapy prevented this complication. Vestibular damage was subsequently observed in 1 patient after streptomycin therapy. The data obtained in these cases appear to agree with those of other cases of incompatible blood transfusion and renal insufficiency in which patients have been subjected to this procedure.

Journal of Nutrition, Philadelphia

34:131-252 (Aug.) 1947. **Partial Index**

*Diet of Mother and Brain Hemorrhages in Infant Rats. E. E. Brown, J. E. Fudge and L. R. Richardson.—p. 141.
*Availability of Carotene from Carrots and Further Observations on Human Requirements for Vitamin A and Carotene. Elizabeth C. Callison and Elsa Orent-Keiles.—p. 153.
Folic Acid, Para-Aminobenzoic Acid and Anti-Pernicious Anemia Liver Extract in Swine Nutrition. T. J. Cunha and others.—p. 173.
Sparing Action of Protein on Pantothenic Acid Requirement of the Rat: II. Urinary and Fecal Excretion of Pantothenic Acid. Marjorie M. Nelson, F. Van Nouhuys and H. M. Evans.—p. 189.
Effect of Mixed Tocopherols on Utilization of Vitamin A in Rat. Janet M. Lemley, R. A. Brown, O. D. Bird and A. D. Emmett. —p. 205.
Metabolism of Women During Reproductive Cycle: XIII. Utilization of Niacin During Lactation. Margaret Coryell and others.—p. 219.

Diet of Mother and Brain Hemorrhages in Infant Rats.—Brown and his co-workers reared female rats to maturity on a synthetic diet that was deficient in vitamin K. If lard was removed from their diet and the females were allowed to bear litters, a high incidence of brain hemorrhages occurred in the offspring. The hemorrhages did not occur when the diet contained either lard or vitamin K. The blood coagulation time of females which produced hemorrhagic young and of young with visible hemorrhages was normal. This shows that the prothrombin level was not abnormally low. It is suggested that some substance which acts normally to maintain capillary strength is not synthesized by the body when the diet is low in fat and deficient in vitamin K. An assay with chicks shows that lard may contain a small but significant amount of vitamin K.

Carotene from Carrots in Human Diet.—In studies by Callison and Orent-Keiles comparison of the human vitamin A requirements calculated from the chemical analyses of the several supplements demonstrates that carotene from different sources

V 1
194

varies in its availability to the human organism. For some subjects carotene from a food source appears to be more fully utilized than carotene in oil. Two subjects required only 63 and 61 per cent as much carotene derived from peas as from crystalline carotene in oil. Two others required 81 and 83 per cent as much carotene when derived from spinach as from pure carotene in oil. Inasmuch as neither chemical analyses of carotene content nor bioassays of vitamin A potency are necessarily indicative of the actual availability of this nutrient to the human being, clearcut differentiation should be made between (1) the vitamin A or carotene content of a food as determined by chemical analysis, (2) the vitamin A or carotene requirement of the animal, including man, as determined by the amount of crystalline carotene or vitamin A preparation necessary for the support of a specific physiologic function (for example, growth or normal adaptation to the dark) and (3) the efficiency of utilization of the nutrient from a given food to meet these requirements. The results of this study emphasize the need for caution when making use of carotene and vitamin A values found in current food composition tables to diets and evaluate their adequacy with respect to human requirements for this vitamin.

Journal of Thoracic Surgery, St. Louis

16:305-444 (Aug.) 1947

*Complications of Surgery of Patent Ductus Arteriosus. J. C. Jones. —p. 305.
*Complete Division for Patent Ductus Arteriosus. R. E. Gross.—p. 314.
Lung Resection for Pulmonary Tuberculosis. C. P. Bailey.—p. 328.
Intrabronchial Hemorrhage in Battle Casualties. M. H. Williams.—p. 342.
Thoracoscopy and Pneumolysis in Pulmonary Tuberculosis: Notes on Technic and Immediate Results. W. E. Kunstler.—p. 353.
Unusual Hamartoma (So-Called Choudroma of Lung). M. A. Simon and H. C. Ballon.—p. 379.
Adenomas Arising from Small Bronchi not Visible Bronchoscopically. H. C. Maier and W. W. Fischer.—p. 392.
Fascia Lata Grafts for Chest Wall Defects. W. L. Watson and A. G. James.—p. 399.
Puncture Wounds of Chest. H. Montgomery, D. Halbersleben and F. B. Carr.—p. 407.
Sodium Tetradecyl Sulfate, Azochloramide and Sulfanilamide Mixture in Prevention of Empyema Following Pneumonectomy with Contamination. O. C. Brantigan and H. L. Rigdon.—p. 416.
Pulmonary Tuberculosis Associated with Anomalous Common Left Pulmonary Vein Entering Left Innominate Vein. J. S. Conant and L. T. Kurland.—p. 422.
Anomaly of Aorta Simulating Mediastinal Tumor. D. B. Corcoran and F. P. Coleman.—p. 427.
Nerve Blocking Therapy for Fractured Ribs. D. J. Richardson and E. M. Papper.—p. 432.
Continuous Spinal Anesthesia for Thoracoplasty: Report of 300 Operations. G. J. Willauer, R. J. Chodoff and J. L. Garcia-Oller.—p. 438.

Surgical Complications of Patent Ductus Arteriosus.—Jones operated on 61 patients with patent ductus arteriosus; the youngest patient was under 3 years and the oldest was 35. Fifty-three operations were ligations in continuity and 8 were divisions followed by suture. There were 2 deaths, 1 a late death from endocarditis due to Staphylococcus aureus, and 1 an operative death resulting from exsanguination and cardiac arrest. In 2 patients there developed aortobronchial fistulas with large hemoptyses, one of which was repaired surgically; the other appears to be healing spontaneously. Five of the patients with ligations had an early recurrence of the murmur due to incomplete occlusion of the vessel by the tapes, and 5 others had a late establishment of the fistula due to the tapes partially cutting through the wall of the ductus. Five had postoperative atelectasis of the lower lobe of the left lung. There were 2 cases of empyema, 1 of which followed a pneumonia. Two patients have a permanent, left, recurrent, laryngeal nerve paralysis. Fifty-nine patients are alive and, although 9 patients have a persistent continuous murmur, only 1 is not well; she is a diabetic person with a reestablished fistula and a low reserve.

Complete Division for Patent Ductus Arteriosus.—Gross treated 90 patients between the ages of 2 and 46 years by complete division of a patent ductus arteriosus. Two patients died, 1 from staphylococcus-caused mediastinitis and the other from cardiac decompensation. Neither fatality was related to the division itself, and in neither instance would simple ligation have avoided a fatal issue. In children, in whom the ductus arteriosus is soft, yielding, elastic and easily compressible, a ligation can almost always be relied on to produce a permanent closure. In older persons the ductus is frequently unyielding, is difficult to compress and has an exaggerated pulsation transmitted to it by a sclerotic and fixed aorta, so that ligation in any form will occasionally lead to partial recurrence of the fistula. The complete division of the patent ductus has been so completely satisfactory that all forms of ligation of the vessel have now been completely abandoned, and division of the ductus may be carried out in all cases.

Journal of Urology, Baltimore

58:97-162 (Aug.) 1947

Anuria: Tubulo-Interstitial Extravasation. I. Renal Capsulotomy. Preliminary Report. F. A. Reuter.—p. 97.
Replacement Lipomatosis of Kidney. J. Frumkin.—p. 100.
Acute Lymphatic Leukemia with Diabetes Insipidus and Uremia. J. E. Flynn and J. M. Bowers.—p. 106.
Unusual Foreign Body Ulcerating into Bladder from the Bowel. S. Baron and H. Lipschutz.—p. 112.
Endocrinologic Studies on Prostate Gland in Male Rabbit. II. Response of Intraocular Prostatic Implants to Estrogens in Completely Prostatectomized Animal, Intact and Castrate. B. Krichesky and J. A. Benjamin.—p. 114.
*Hemolytic Reactions During Transurethral Prostatic Resection. C. D. Creevy.—p. 125.
Calcification of Seminal Vesicles: Case Report. J. D. Shea and J. W. Schwartz.—p. 132.
Mullerian Duct Cyst. L. R. Culbertson.—p. 134.
Report on Incidence of Urinary Lithiasis in Canal Zone. M. H. Judd and W. C. Meyers.—p. 137.
Case Report of Avulsion of Male External Genitalia. A. A. Williams, M. Walker and O. D. Chambers.—p. 140.
Determination of Phenolsulphonphthalein with Photoelectric Colorimeter and Application to "Phthalein Elimination Curve." P. L. Scardino and W. W. Scott.—p. 143.
Clinical Use of Sodium Thiosulfate (Nyiri) Test, Compared with Phenolsulphonphthalein Test. W. E. Goodwin.—p. 151.
Care of Cutaneous Ureterostomy: New Apparatus. H. M. Trafton and M. Kaufman.—p. 159.

Hemolytic Reactions During Transurethral Prostatic Resection.—Creevy presents evidence that water used as irrigating fluid may enter the circulation through open prostatic veins during transurethral resection, and hemolyze red blood cells. This may lead to a severe anemia and to a hemoglobinemia which may cause toxic changes in the tubular epithelium and plugging of the collecting tubules, and so produce uremia. These effects are probably aggravated by renal vasoconstriction produced by rapid loss of blood, and by preexisting lesions of the kidneys, such as arteriosclerosis, hydronephrosis and pyelonephritis. The hemoglobinemia also causes jaundice. The reaction is similar to that seen after a transfusion with incompatible blood. A fatal case is reported in which severe hemoglobinemia was followed by uremia and death. Pigmented casts were found in the collecting tubules. Treatment of severe hemolysis is probably futile, but the hemolytic reaction can be prevented by the use of a sterile 4 per cent solution of dextrose as an irrigating fluid during operation. Transitory bacteremia resulting from the washing of bacteria from the prostate into the venous system is treated prophylactically by administering penicillin and sulfadiazine before, during and after operation. The results thus far have been excellent in 158 cases. No hemolytic reactions have occurred, and both morbidity and mortality seem to have been much reduced.

Minnesota Medicine, St. Paul

30:809-912 (Aug.) 1947

"For Manners Are Not Idle." L. A. Buie.—p. 841.
Postgraduate Medical Education in Private Hospital. A. H. Wells. —p. 845.
Water Borne Tularemia. A. Falk.—p. 849.
Infection of Neck After Tonsillectomy. C. F. Lake.—p. 851.
*Sporotrichosis in Minnesota. J. F. Madden.—p. 854.
Tuberculosis Among Residents of Olmsted County Over Age of 65: Data on Blood Pressure, Hemoglobin and Urine Tests. F. M. Feldman.—p. 856.
*Metastatic Carcinoma of Heart: Report of a Sole Metastasis from Carcinoma of Cecum Diagnosed Before Death. J. S. Blumenthal and H. W. Peterson.—p. 860.

Sporotrichosis.—Madden reports 3 cases of sporotrichosis, 1 in a school boy aged 12 years, 1 in a Mexican aged 41 and 1 in a farmer's wife aged 41. The infections were of the localized lymphatic type. Sporotrichum schencki was demonstrated from cultures made on Sabouraud's glucose agar slants. In the first case sulfathiazole therapy was of no value even though the drug

was given for two months. All patients responded favorably and rapidly to treatment with potassium iodide; the lesions healed in from seventeen days to three weeks. Potassium is considered specific in the treatment of sporotrichosis.

Carcinoma of the Heart.—Blumenthal reports 1 case of adenocarcinoma of the cecum in a young woman. Diagnosis had been made prior to her admission to the hospital for operative intervention. There was no previous history of cardiac disease. There suddenly developed in the patient a rapid pulse and cyanosis on exertion. There was a loud systolic murmur at the left of the sternum, only recently heard, a negative history of rheumatic fever and negative findings or history of syphilis or tuberculosis. The electrocardiogram showed a definite abnormal tracing with sinus tachycardia, a flat T wave, diphasic ST waves in leads 2 and 3 and a notched QRS interval. Strong consideration was given to neoplastic involvement of the heart. Necropsy revealed a large metastasis of adenocarcinoma to the wall of the right ventricle completely filling the chamber.

Missouri State Medical Assn. Journal, St. Louis

44:555-634 (Aug.) 1947

General Considerations of Treatment of Renal Calculi. H. E. Carlson. —p. 571.
Treatment of Pruritus Ani. C. C. Wilson.—p. 575.
Nodular Goiter: Factors Influencing Therapy. R. W. Bartlett.—p. 576.
The Making of a Surgeon Yesterday and Today. B. Brooks.—p. 579.

44:635-712 (Sept.) 1947

Surgical Treatment of Intervertebral Disk Lesions of Veterans. R. D. Woolsey and K. B. Coldwater.—p. 651.
Traumatic Delayed Rupture of the Spleen. L. H. Pollock.—p. 654.
Tularemic Pneumonia: Opossum as Source of Infection. J. A. Ossman and E. R. Bohrer.—p. 659.
Surgical Removal of Deep Accessory Urethra. W. F. Melick.—p. 661.
Diagnosis and Treatment of Brain Abscess. F. A. Carmichael Jr. —p. 684.

New England Journal of Medicine, Boston

237:141-174 (July 31) 1947

Operative Treatment of Decubitus Ulcer. E. J. Croce and C. H. C. Beakes.—p. 141.
Wound Infections with Friedländer Bacillus Followed by Meningitis. S. Solomon.—p. 149.
Addison's Disease Associated with Amyloidosis Following Thermal Burns: Report of a Case. S. M. Levenson, H. J. Tagnon, W. L. Goodpastor, R. W. Green, F. H. L. Taylor and C. C. Lund.—p. 152.
War Wounds of the Abdomen. C. E. Welch.—p. 156.
Pseudohypertrophic Muscular Dystrophy. Fibrosis of Myocardium. —p. 163.
Benign Peptic Ulcer of Stomach, with Perforation and Mesenteric Abscess.—p. 164.

237:175-206 (Aug. 7) 1947

Septicemia Due to Salmonella Enteritidis. M. P. Baker and J. H. Bragdon.—p. 175.
Familial Hemorrhagic Telangiectasia: Note on Use of Oxidized Cellulose Gauze as Hemostatic Agent in Epistaxis. H. P. Kennedy.—p. 180.
*Renal Injury Following Exposure to Carbon Tetrachloride: Report of a Case. M. Clinton Jr.—p. 183.
*Detection of Tubercle Bacilli by Fluorescence Microscopy. L. Levinson and R. L. White.—p. 186.
War Wounds of the Abdomen. C. E. Welch.—p. 187.
Cyst of Pancreas.—p. 194.
Bronchial Adenoma of Right Main Bronchus, with Hemorrhage into Left Lung.—p. 198.

Renal Injury Following Exposure to Carbon Tetrachloride.—Physicians usually associate carbon tetrachloride poisoning with serious hepatic damage and jaundice. It is not generally recognized that inhalation of carbon tetrachloride frequently results in a clinical picture in which renal and pulmonary injury predominate and hepatic injury is not evident. The author reports a case of severe renal injury without clinical evidence of hepatic injury following brief but intense exposure to carbon tetrachloride vapor. The clinical picture in this case was dominated by anorexia, lethargy, hypertension, azotemia and urinary findings suggestive of nephritis. Complete recovery, with a return of the blood pressure to normal and disappearance of evidences of renal disease, took place under conservative therapy. The author suggests that this syndrome might frequently follow the inhalation of carbon tetrachloride.

Detection of Tubercle Bacilli by Fluorescence Microscopy.—Levinson and White state that the method of fluorescent staining for the demonstration of tubercle bacilli in smears proposed in 1937 by Hagemann offered a promising simplification of the rather cumbersome Ziehl-Neelsen technic. Many in this country have tried the procedure and have not been impressed with the results. The authors think that insufficient trial and inadequate equipment are largely responsible for unsatisfactory results and outline better methods and equipment and the results obtained therewith. The advantages of the fluorescent staining of the tubercle bacillus over the Ziehl-Neelsen technic are many. It requires only about three and a half minutes to stain a slide completely without the use of heat. Because of the use of lenses of lower power it is possible to examine a smear completely in less than twenty minutes. This method is considered more accurate than the Ziehl-Neelsen technic. The technic can be used safely for the screening of large numbers of specimens of sputum, the Ziehl-Neelsen method being restricted to the few specimens in which questionable fluorescent particles are encountered. Color-blind persons can identify the tubercle bacillus more readily with the fluorescent than with the Ziehl-Neelsen method.

New Jersey Medical Society Journal, Trenton

44:301-346 (Aug.) 1947

*Surgical Treatment of Continued Hypertension: Suggestions About Selection of Cases for This Form of Therapy. R. H. Smithwick. —p. 304.
Background of Anti-Histamine Substances. C. F. Post.—p. 317.
Observations on Subacute Bacterial Endocarditis. Estelle E. Kleiber. —p. 321.
Atypical Acute Appendicitis. J. Riese.—p. 325.

Surgical Treatment of Continued Hypertension.—This communication by Smithwick is based on results in 439 unselected hypertensive patients treated by extensive sympathetic denervation of the visceral vascular bed and followed from one to five or more years. The discussion is offered in the hope that it will be of help in the selection of patients who are most likely to benefit from treatment of this sort. The operation performed in these cases amounts to a combination of the subdiaphragmatic splanchnicectomy of Craig and Adson and the supradiaphragmatic procedure of Peet. It was developed as the result of multiple stage operations in a small series of patients in whom lesser procedures had failed to modify the hypertension. The operation is performed in two stages, eight to ten days apart. The majority of patients were improved, as judged both by a favorable effect on blood pressure levels and by lessening in the severity of cardiovascular damage.

New York State Journal of Medicine, New York

47:1671-1726 (Aug. 1) 1947

Practical Applications of Endocrines in Gynecology. G. P. Heckel. —p. 1677.
Fibrositis (Muscular Rheumatism) Including Dupuytren's Contracture: New Method of Treatment. C. L. Steinberg.—p. 1679.
Recent Developments in Care of Prostatic Disorders. J. E. Heslin. —p. 1683.
Therapeutic Applications of Curare and Their Physiologic Implications. E. B. Schlesinger.—p. 1689.
Diverticulosis and Diverticulitis of the Colon: Review of 99 Cases. L. K. Stalker and S. C. Wittmer.—p. 1693.
*Antihistamine Drugs in Asthma and Hay Fever. D. L. Engelsher. —p. 1696.

Antihistaminic Drugs in Asthma and Hay Fever.—Engelsher studied the effect of the antihistaminic drugs, diphenhydramine, or "benadryl" N. N. R., and tripelennamine, or "pyribenzamine" N. N. R., on simple, multiple and mixed forms of asthma and hay fever on 193 patients he had known for a number of years. These patients were given the two drugs for a three-day trial. In 127 cases, roughly two thirds, the symptoms were either unrelieved or aggravated; the drying effect resulted in cough and asthma in some patients who never before had had chest symptoms. Of the remaining one third, some were definitely improved and others somewhat better. None of the severe cases of asthma was relieved; most benefit occurred in urticarias. In comparison of the antihistaminic drugs to standard pharmaceutic preparations used in various synergistic combinations, such as ephedrine, epinephrine, acetylsalicylic acid, aminophylline, phenobarbital, codeine, iodides and others, the new drugs fail by far in effectiveness in allergic conditions of

V 1
194

the respiratory tract. Although the antihistaminic drugs may be of fair to striking value in a small percentage of cases of hay fever and asthma, the vast majority of patients are not benefited.

47:1727-1822 (Aug. 15) 1947

Present Status of BCG in Prophylaxis of Tuberculosis. M. I. Levine. —p. 1771.
Pharmacology, Physiology and Clinical Evaluation of New Antihistaminic Drugs (Pyribenzamine and Benadryl). C. E. Arbesman.—p. 1775.
Public Health Aspects of Treatment of Tinea Capitis. L. Schwartz. —p. 1782.
Nutrition and Child Health. R. R. Scobey.—p. 1786.
Diethylstilbestrol as Aid in Treatment of Psoriasis. L. Frank.—p. 1790.
Meningococcic Myocarditis. S. Epstein, A. Cohen, T. J. Longo and W. Dorfman.—p. 1793.
*Ritter's Disease in Fraternal Twins, Special Reference to Pathogenesis. A. S. Wiener.—p. 1796.
Chronic Progressive Bacterial Synergistic Gangrene. A. J. Caliendo. —p. 1798.

Ritter's Disease in Fraternal Twins.—Wiener reports the occurrence of Ritter's disease in fraternal, premature boy twins. Blood tests on the parents revealed that the mother was Rh negative and the father heterozygous Rh positive. The mother belonged to group O and the father to group A. One of the twins belonged to the O group and was Rh negative, the other belonged to the A group and was heterozygous Rh positive. Tests on the maternal serum during pregnancy proved that she was not sensitized either to the agglutinogen Rh or to agglutinogen A. Thus isosensitization to the Rh or A factors as possible etiologic factors was excluded. The possibility of infection seemed to be excluded by the afebrile course of the disease, its simultaneous appearance in both twins five weeks after birth and the clinical course and blood findings. The mother of the twins gave a history of poison ivy dermatitis which occurred near the end of her pregnancy and which was unusual in its severity and in the extensive distribution of the lesions. The concept is suggested that the toxic principle of the plant combined with the mother's skin proteins, altering them sufficiently to make them antigenic, thus stimulating the production of skin antibodies. These antibodies, combining with skin proteins on other parts of the mother's body, would account for the extensive distribution of the lesions on her body. In addition, the antibodies passing through the placenta into the bodies of the twins could also account for the occurrence of the exfoliative dermatitis in them.

Philippine Medical Association Journal, Manila

23:89-136 (March) 1947

Multiple Serositis: Report of 5 Cases. A. V. Tupas and A. P. Jongco. —p. 89.
Study on Ileocecal Tuberculosis. C. D. Franco and P. M. Recio.—p. 97.
Mazzini's Flocculation Test: Comparison with Kahn Test. J. Ramirez, J. Tanquintic and F. Catanjal.—p. 103.
Present Status of Acute Appendicitis: Based on Study of Cases in North General Hospital. F. C. Guzman and F. B. Constantino.—p. 107.
Biological Assay for Thiamin of "Carabao" Variety of Philippine Mango Mangifera Indica L.). S. G. Jao and P. I. de Jesus.—p. 113.

23:137-190 (April) 1947

*Xerophthalmia and Keratomalacia in Children. A. Tupas, L. V. Pecache and A. Melo,—p. 137.
Morphological Variation of Plasmodium Vivax. T. P. Pesigan.—p. 145.
Incidence of Intestinal Parasitism Among Food Handlers. Prudencia B. Calubaquib and H. Rolda.—p. 149.
Ureteral Leukoplakia: Review of Literature with a Case Report. (Successful Resection of Ureter with Reimplantation into Urinary Bladder.) L. F. Torres Jr. and P. M. Recio.—p. 153.
Chronic Intussusception. P. M. Recio.—p. 161.

Xerophthalmia and Keratomalacia in Children.—Tupas and his co-workers review observations on 97 cases of vitamin A deficiency with ocular manifestations. Vitamin A deficiency may be brought about in three ways: (1) through inadequate intake of this vitamin; (2) through deficient absorption and storage as a result of intestinal or hepatic derangement, and (3) through an increased demand for this vitamin, as during periods of rapid growth or of disease. In most of the cases observed by the authors the eye symptoms were caused by the second and third factors. In several instances admission into the hospital was sought not for the ocular lesion but for dysentery or bronchopneumonia. The ocular lesion, if complained of, was only a minor consideration. Night blindness and photophobia are early symptoms. Examination of the eyes may reveal xerotic conjunctivas and Bitot's spots. Keratomalacia is the advanced form of the ocular lesion due to vitamin A deficiency. It existed in 14 of the 97 cases reviewed. The authors emphasize the importance of early diagnosis and treatment to prevent blindness in infancy and childhood. Treatment consisted mainly of giving diets rich in vitamin A, like eggs, bananas and liver. In cases in which the appetite had been impaired or completely lost, vitamin A concentrates and multiple vitamins were given. The local application of vitamin A in oil to the eyes was also tried with fairly good results.

Public Health Reports, Washington, D. C.

62:1041-1072 (July 18) 1947

Comparison of Spirocheticidal Activity of Arsphenamines and Phenarsines (Arsenoxides) in Experimental Syphilis. T. F. Probey.—p. 1041.
Toxic Effects of Tetranitromethane, A Contaminant in Crude TNT. R. F. Sievers, E. Rushing, Helen Gay and A. R. Monaco.—p. 1048.

62:1073-1112 (July 25) 1947

*Nutrition Studies: I. Description of Physical Signs Possibly Related to Nutritional Status. H. R. Sandstead and R. K. Anderson.—p. 1073.
DDT in Oil as a Larvicide in an Area Ordinarily Considered Difficult to Treat. H. A. Johnson and M. W. Yates.—p. 1085.

62:1113-1148 (Aug. 1) 1947

International Control of Tuberculosis. H. E. Hilleboe.—p. 1114.
Cataloging X-Ray Experiences. F. J. Hodges.—p. 1129.

Physical Signs Related to Nutritional Status.—According to Sandstead and Anderson theirs is the first of a series of reports to be issued by the Nutrition Section on the prevalence of nutritional deficiency in various areas of the United States. The report deals with the criteria used in the clinical evaluation of nutritional status. An outline is presented of physical signs possibly related to nutritional deficiency and which may be useful for the evaluation of nutritional status of population groups. The nutritional significance of many of these signs remains to be determined. This outline does not establish final criteria for nutritional evaluation. It is believed that by determining the prevalence of these signs in population groups and their relation to other evidences of malnutrition, such as faulty diets and unusual laboratory findings, it will be possible to increase knowledge of the meaning of these signs as well as obtain a useful estimate of the nutritional status of the groups studied.

Radiology, Syracuse, N. Y.

49:131-268 (Aug.) 1947

Iodinated Organic Compounds as Contrast Media for Radiographic Diagnoses: VI. Experimental Studies on Emulsions of Ethyl Iodophenylundecylate (Pantopaque). W. E. Chalecke, G. E. Jones, L. L. Miller, T. B. Steinhausen and W. H. Strain.—p. 131.
Id: VII. Visualization of Empyema Cavities with Aid of Ethyl Iodophenylundecylate Emulsion. M. P. George, E. B. Mahoney, H. E. Pearse and W. H. Strain.—p. 137.
Id.: VIII. Studies on Tetraiodophthalimidoethanol as Medium for Gastro-Intestinal Visualization. G. E. Jones, W. E. Chalecke, J. Dec, J. A. Schilling, G. H. Ramsey, H. D. Robertson and W. H. Strain—p 143.
Mucosal Deformities of Greater Curvature of Stomach. M. Feldman. —p. 152.
Carcinoma of Tonsil: Review of Treatment and Results in Group of 90 Cases. J. H. Walker and M. D. Schulz.—p. 162.
*Gout: Clinical, Pathologic and Roentgenographic Observations. E. F. Rosenberg and R. A. Arens.—p. 169.
*Roentgenologic Diagnosis of Appendiceal Calculi. B. Felson and C. M. Bernhard.—p. 178.
Bronchiectasis: Some Medical Features Among Military Personnel. S. Cohen.—p. 192.
*Uptake of Radioactive Iodine by Normal and Disordered Thyroid Gland in Children: Preliminary Report. Edith H. Quimby and D. J. McCune. —p. 201.
Preparation of Radioautographs of Thyroid Tumors for Study at High Magnification. T. C. Evans.—p. 206.
Cancer of Prostate. L. Guzman.—p. 214.
Application of Radioactive Isotopes to Study of Radiation Effects in Cells. M. D. Kamen.—p. 223.
Hemangioendothelioma: Rare Malignant Tumor. V. Drucker.—p. 231.
Influence of Dose Fractionation on Lethal X-Ray Effect Produced by Total Body Irradiation in Mice: Preliminary Note. F. Ellinger. —p. 238.

Gout.—Rosenberg and Arens review the history of roentgenography in gout, discuss some of its clinical and pathologic aspects and relate these to the roentgenologic aspects which are important in the diagnosis of this condition. An understanding of the life history of gout and the pathologic changes associated with this condition is essential for the interpretation of the roentgenographic changes. The essential lesion produced in

tissues by gout consists of a unique granuloma resulting from the reaction of tissues to the deposition of uratic crystals. Agglomeration, fusion and centrifugal expansion of these tubercles bring about the destruction and disorganization of the tissues in which they are found.

Roentgenologic Diagnosis of Appendiceal Calculi.—Felson and Bernhard encountered 10 patients with appendiceal calculi. Nine of these had roentgen studies from which a diagnosis was made, and in 7 the diagnosis was verified surgically. One patient did not have a roentgenologic examination, and the diagnosis was first made at operation. During this period it is estimated that 300 appendectomies were performed in the various hospitals in which these patients were seen. In addition to the aforementioned 10 cases, the authors review 100 cases from the literature. They conclude that the occurrence of stones in the appendix is a serious and not infrequent condition. The almost constant occurrence of acute appendicitis in these cases, with an incidence of perforation of nearly 50 per cent, makes the importance of early diagnosis obvious. Once the diagnosis of appendiceal calculus is made, immediate surgical intervention is indicated. The value of roentgenographic examination in acute abdominal conditions is stressed. It is considered that in every case of laminated calcification in the right lower quadrant the diagnosis of appendiceal stone should be entertained and immediate steps be taken to confirm or disprove it.

Uptake of Radioactive Iodine by Thyroid in Children.—Quimby and McCune obtained eight day radioactive iodine (I^{131}), carrier-free, from the cyclotron laboratory of the Massachusetts Institute of Technology in dilute solution of sodium iodide. The material was administered quantitatively by mouth, a stomach tube being used in infants and uncooperative small children. The doses varied from 20 to 40 microcuries (containing not more than 2 micrograms of iodine) in about 20 cc. of solution. The relative quantities of the iodine concentrated in the thyroid glands were determined by measurements with a shielded Geiger counter placed in a fixed position over the front of the neck. These were related to the administered doses by measurements in the laboratory with a "phantom" set-up approximating the geometric relationships with the patient. Administration of radioactive iodine is followed by concentration and retention within the thyroid gland of amounts which vary from about 12 per cent in those without evident thyroid disease upward to severalfold this value in hyperthyroidism and downward to less than 1 per cent in those who have typical hypothyroidism. Values considerably below the mean, and occasionally as low as those in unmistakable hypothyroidism, are found not only in persons who have only dubious hypothyroidism but also in some whose thyroid function is definitely beyond clinical suspicion of insufficiency. These limitations to interpretation depend in part on the fact that hyperthyroidism and hypothyroidism are both relative states and show variability of degree. Examination of the data suggests that sharper results could be obtained by more careful standardization.

Review of Gastroenterology, New York

14:521-584 (Aug.) 1947

*Improvement in Kidney Function Following Treatment for Cirrhosis of the Liver. L. M. Morrison.—p. 533.
Important Embryologic and Anatomic Considerations for Diagnosis of Gastric Disease. A. X. Rossien.—p. 539.
Intestinal Parasitosis in Civilian Population. H. B. Shookhoff.—p. 547.
Mucocele of Appendix. F. J. Kirby.—p. 553.
Habitual Constipation. D. A. Meiselas.—p. 558.
Umbilical Hernia. N. B. Jaffe.—p. 562.

Improvement in Kidney Function Following Treatment for Cirrhosis of Liver.—Morrison directs attention to the association of kidney disease with impairment of the liver and shows that considerable evidence has accumulated to indicate that when fatty cirrhosis of the liver is produced in experimental animals renal degeneration occurs. From this and other evidence it was concluded that renal degeneration, like fatty cirrhotic liver, is a manifestation of a deficiency in labile methyl groups. Morrison attempted to investigate whether improvement takes place in the renal function following modern dietetic treatment of hepatic cirrhosis. He presents a comparative analysis of the changes in urinary symptoms (albuminuria, cylindruria, excess in erythrocytes and leukocytes in the urine) of 39 patients in whom kidney disorders were associated with cirrhosis of the liver, before and after treatment. Two grams of methionine were given daily by mouth in three divided doses at mealtime. Two grams of choline were administered at the same time. Casein was supplied by the high intake of skimmed milk and cottage cheese daily. Liver extract and vitamins were also given. The basic diet had a high protein, high carbohydrate and high vitamin but low fat content and provided from 2,500 to 4,000 calories a day. Great improvement frequently occurred in urinary symptoms and abnormalities in sediment after the described treatment for hepatic cirrhosis. A modified plan of treatment of nephrosis is suggested.

Southern Medical Journal, Birmingham, Ala.

40:631-720 (Aug.) 1947. **Partial Index**

Attempt to Forestall Acute Coronary Thrombosis: Preliminary Note on Continuous Use of Dicumarol. E. S. Nichol and D. W. Fassett.—p. 631.
Otomycosis: Comments Concerning Incidence, Symptomatology and Treatment. W. D. Gill.—p. 637.
Aberrant Ureter: Preoperative Roentgen Diagnosis of Congenital Anomaly. P. C. Schnoebelen, H. R. Senturia and L. M. Aronberg.—p. 644.
Dyspareunia. B. T. Beasley.—p. 646.
Occipital Nerve Tenderness: Sign of Headache. H. N. Perelson.—p. 653.
A New Syndrome: Association of Latent Vertical Phoria with Endocrine Dsyfunction. E. H. Coachman.—p. 656.
Abuses of X-Ray and Radium in Dermatologic Conditions. A. H. Lancaster.—p. 666.
Handling of Certain Emergency Allergic Conditions. D. R. Thomas Jr. and J. W. Thomas.—p. 670.
Biological and Sociological Factors in Involutional States. O. B. Chamberlain.—p. 675.
Modern Chemotherapy in Non-Specific Urinary Tract Infections. E. P. Alyea and A. A. Parrish.—p. 678.
Quantitative Serologic Tests for Syphilis: Use and Availability in Venereal Disease Control. V. Scott and E. Gurney Clark.—p. 685.
Delayed Serum Type of Reaction to Penicillin: Report of 3 Cases in One Family. E. L. Kendig Jr. and E. C. Toone Jr.—p. 697.
Modern Management of Hemorrhoidal Disease. R. C. Alley.—p. 698.
Vaginal Hysterectomy: Indications and Technic. V. S. Counseller.—p. 701.

Surgery, Gynecology and Obstetrics, Chicago

85:129-274 (Aug.) 1947

*Pulmonary Resection for Solitary Metastatic Sarcomas and Carcinomas. J. Alexander and C. Haight.—p. 129.
Diagnosis of Abdominal Trauma in Warfare. C. G. Rob.—p. 147.
Plasma Clot Graft of Peritoneum for Perforations of Stomach: Preliminary Report of Experimental Study. J. Bloom.—p. 155.
One Stage Pancreatoduodenectomy. A. Brunschwig.—p. 161.
Acute Injuries Involving Large Blood Vessels in Neck. M. E. Lichtenstein.—p. 165.
Improvement in Abdominal Hysterectomy Mortality. R. S. Siddall and H. C. Mack.—p. 176.
Strangulated Femoral Hernia: Surgical Management. J. P. Jarboe and J. H. Pratt.—p. 185.
Mechanism of Production of Linear Skull Fracture: Further Studies on Deformation of Skull by the "Stresscoat" Technic. E. S. Gurdjian, H. R. Lissner and J. E. Webster.—p. 195.
Stability of Thrombin, Penicillin, or Streptomycin, in Presence of Gelatin Sponge, Oxidized Cellulose or Each Other. J. T. Correll and E. C. Wise.—p. 211.
Subperitoneal Hemorrhage from Vitamin C Deficiency Simulating Acute Surgical Abdominal Conditions. L. E. Hines.—p. 214.
Simple and Aseptic Method of Ileocolostomy. J. T. Kate.—p. 217.
Late Results of Ureteroenterostomy. G. G. Smith.—p. 221.

Pulmonary Resection for Solitary Metastatic Sarcomas and Carcinomas.—Alexander and Haight say that the appearance of a presumed solitary metastatic lesion in a lung months or years after the complete removal of a primary extrapulmonary sarcoma or carcinoma is far from rare. If untreated these patients almost invariably die. A search of the literature reveals only 5 case histories in which both the primary and the metastatic pulmonary lesions have been removed. The authors report 19 additional case histories from various clinics which have not been published previously. Of the 24 patients, 11 have had recurrence of their neoplasms, 1 died as a direct result of operation and 12 are apparently free from recurrence. Among the 12 patients with no recurrence, 8 are apparently well twelve, seven, six, five, four, three, one and one fourth and one years, respectively, after the pulmonary resection operations. Four patients were operated on too recently for evaluation. Six of the 8 sarcoma patients but only 6 of the 15 carcinoma patients are apparently free of recurrence.

V 1
194

Surgery, St. Louis

22:161-410 (Aug.) 1947. **Partial Index**

Responsibility of University Surgeon. E. C. Cutler.—p. 161.
Does Medical Insurance Endanger Resident System of Training Surgeons? H. E. Pearse.—p. 165.
Surgical Management of Large Defects of Thoracic Wall. H. C. Maier. —p. 169.
Use of Prosthesis to Prevent Overdistention of Remaining Lung Following Pneumonectomy: Preliminary Report. J. Johnson, C. K. Kirby, C. S. Lazatin and J. A. Cocke.—p. 179.
Use of Jejunum in Construction of Antethoracic Esophagus. J. Van Prohaska and J. Sloan.—p. 191.
Control of Hemorrhage from Cardiac Auricles by Gelatin Sponge: Experimental Study. R. W. Jampolis, H. P. Jenkins, M. M. Newman and G. L. Nardi.—p. 198.
Congenital Arteriovenous Fistula Between Internal Maxillary Artery and Pterygoid Plexus. F. Gerbode and E. Holman.—p. 209.
Carotid Body Tumor in Association with Carotid Sinus Syndrome. B. McSwain and F. C. Spencer.—p. 222.
Early Clinical Results of Transabdominal Celiac and Superior Mesenteric Ganglionectomy, Vagotomy or Transthoracic Splanchnicectomy in Patients with Chronic Abdominal Visceral Pain. K. S. Grimson, F. H. Hesser and W. W. Kitchin.—p. 230.
*Vagotomy for Peptic Ulcer: Experimental and Clinical Studies. H. N. Harkins and D. H. Hooker.—p. 239.
*Experiences with Vagectomy for Peptic Ulcer, with Report of Unsuccessful Case. R. Warren.—p. 246.
Localized Acquired Megacolon Treated by Sympathectomy. H. G. Smithy and F. E. Kredel.—p. 259.
Management of Cancer of Colon. P. I. Hoxworth and J. Mithoefer. —p. 271.
*Familial Polyposis of Colon: Two Families, 5 Cases. P. Guptill.—p. 286.
Effect of Streptomycin in "Closed Loop" Appendicitis: Experimental Study. J. M. Farris and H. H. Romack.—p. 305.
Femoral Hernia with Gangrenous Bowel. C. Dennis and R. L. Varco. —p. 312.

Vagotomy for Peptic Ulcer.—In a series of 9 dogs on which the Mann-Williamson operation with supplementary transthoracic vagotomy was performed by Harkins and Hooker, ulcer developed in only 1 dog. In a series of 13 control dogs on which only the Mann-Williamson operation was performed, there was an incidence of 11 jejunal ulcers. Pyloric ligation-induced ulcers of the gastric rumen of rats developing within twenty-four hours (346 ulcers in 17 rats) were prevented in rats with pyloric ligation plus supplementary vagotomy (there was not 1 ulcer in 15 rats). The duration of life of pylorus-ligated rats was lengthened by vagotomy (control series: forty-six hours; vagotomized series: ninety-seven hours). Neither the decrease in volume nor in acidity of the gastric fluid after vagotomy entirely explains the lack of ulceration in these rats. In a series of 36 patients with peptic ulcer on whom vagotomy was performed, there were 4 failures of the operation. The triad of symptom changes produced in 32 patients by the vagotomy includes relief of pain, relative diarrhea and delayed gastric emptying. The gastric distention and delayed emptying time following vagotomy occurred in 1 case entirely independently of any possible pyloric scarring or stenosis.

Vagectomy for Peptic Ulcer.—Warren treated 15 patients between the ages of 23 and 52 years who had duodenal or stomach ulcers with vagectomy at the Veterans Administration Hospital in West Roxbury, Mass. The transthoracic route was used in all but 1 case. Early results with vagectomy have offered hope of decreasing the large incidence of peptic ulcer (6.7 per cent over a three year period) among veterans. The action of vagectomy on gastric physiology appears to be that of decreasing all the functions of the stomach. It does not cause pylorospasm. The retention of solid material and the passage of liquids is the result of this action. In most cases it causes no symptoms. In 1 patient 2 gastric ulcers developed after vagectomy for duodenal ulcer and required gastric resection. It is suggested that in certain ulcer patients the gastric phase of secretion contributes more to the hyperacidity than the cephalic phase. Young patients with hypersecretion and patients with ulcer of the stomach after an earlier gastrojejunal anastomosis should be accepted for vagectomy, while recent massive hemorrhage in patients over 45 years or active bleeding at the time of surgical intervention at any age, diagnostic uncertainties produced by conflicting roentgenograms, poor mechanical situations resulting from ill advised previous surgical measures and pyloric obstruction may be considered as contraindicative. Careful gastric secretion studies should be performed before operation.

Familial Polyposis of Colon.—Guptill reports the occurrence of familial polyposis of the colon in two families. In the first family of seven persons, the father, aged 45, and 3 of his children, aged 21, 19 and 11, respectively, had the disease. In the second family there was but 1 case of true polypoid disease in a man aged 39 years. It is believed that other cases could be discovered in this family if examination were permitted. Four of the 5 patients reported had malignant degeneration, in 2 of them multiple. The death of only 1 was due to cancer. The other 2 deaths were due to the excessive demand made by the cellular growth on the general metabolism of the body resulting in fatal malnutrition. In 3 instances the cancer was in the rectum, in 2 in the sigmoid, once each in the descending and left transverse colon. Although polyps occurred about evenly in all parts of the large bowel, cancer occurred largely in the terminal 50 cm. Extirpation of the polyp-bearing mucosa is required to attain cure. Recovery resulted in 2 cases, with a seven year cure in 1, from fulguration of the polyps in the lower part of the rectum, anastomosis of ileum to rectum, followed by a two stage colectomy and subsequent close observation. This procedure is to be considered as the method of choice; it makes colectomy as nearly total as is possible and still preserves the anal sphincter and normal bowel habits.

Texas State Journal of Medicine, Fort Worth

43:239-298 (Aug.) 1947

Problem of Exotic Diseases. T. B. Magath.—p. 247.
Tumor Seminar. Conducted by E. Novak.—p. 251.
Ovarian Hemorrhage. J. W. Jones.—p. 263.
Anesthesia in Thoracic Surgery. E. F. Weir.—p. 267.
Safety Factors in Intrathoracic Surgery Following Trauma. J. T. Lee. —p. 270.
Gastrojejunocolic Fistula. J. T. Krueger.—p. 273.
Radiologic Diagnosis of Lesions of the Large Bowel. J. R. Maxfield Jr. —p. 276.
Exophthalmos Associated with Endocrine Dysfunction. J. S. Guyton. —p. 280.
*Aural Manifestation of Scurvy. J. L. Burgess.—p. 283.
Nasal Allergy Associated with Sinus Disease. L. E. Darrough.—p. 285.

Aural Manifestations of Scurvy.—Burgess states that the best description of the relation of scurvy to influenzal otitis and myringitis bullosa hemorrhagica was given by Logan Turner, who stated that the patient complains of severe earache and that on inspection reddish brown or purple blood blisters can be seen on the walls of the meatus close to the annulus and on the drumhead itself (myringitis bullosa). The bullae are prone to rupture spontaneously, with a blood-stained discharge from the ear. The infective organism is a hemolytic streptococcus. Ruskin was struck by the similarity of the hemorrhagic lesions found in infantile scurvy and lesions found in the ear after influenza. Since the appearance of Ruskin's report, Burgess has collected 22 cases that from a clinical standpoint seemed to corroborate Ruskin's data. Concentration of ascorbic acid, vitamin C, in the body is lowered in the presence of acute infections. It is conceivable that in patients who were already moderately deficient in ascorbic acid an acute infection would lower concentration of this vitamin to a point at which clinical manifestations of scurvy would appear. Such manifestations should disappear after adequate doses of ascorbic acid. The author administers 500 mg. of ascorbic acid a day, with 60 grains (3.88 Gm.) of calcium gluconate.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

55:419-472 (Aug.) 1947

Facts About the Hand: Presidential Address. H. D. Dudley.—p. 419.
Observations on Mechanism of Ovulation in Frog, Hen and Rabbit. Shirley D. Kraus.—p. 424.
Routine Chest Roentgenograms in Pregnancy: Supplementary Study. H. K. Graham.—p. 438.
Effect of Prolapse of Ovaries on Cystic Degeneration and Ovulation. J. C. Weed and C. G. Collins.—p. 442.
Routine Semen Examinations and Their Interpretation. W. W. Williams. —p. 451.
Rh Factor in Infertility. P. Levine.—p. 462.

West Virginia Medical Journal, Charleston

43:261-292 (Aug.) 1947

Medical Perspective. P. A. Tuckwiller.—p. 261.
Management of Breech Presentation. J. M. Whitfield.—p. 266.
Diagnosis and Treatment of Cancer of Breast. N. Treves.—p. 270.
Bureaucratic Control of Medicine. Marjorie Shearon.—p. 276.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

59:239-280 (July) 1947

Penicillin Therapy. R. M. B. MacKenna.—p. 239.
Use of Penicillin in Dermatology. F. F. Hellier.—p. 249.

British Journal of Industrial Medicine, London

4:77-140 (April) 1947

Some Anatomical Problems in Naval Warfare. G. Weddell and H. D. Darcus.—p. 77.
Dental Erosion in Workers Exposed to Inorganic Acid Fumes. J. B. Lynch and J. Bell.—p. 84.
Reaction of Human Blood Forming Tissues to Chronic Benzene Exposure. V. H. Bowers.—p. 87.
Pneumoconiosis in a Boiler Scaler. H. E. Harding, D. L. McRae Tod and A. I. G. McLaughlin.—p. 100.
Placement in Industry of Physically Handicapped: Practical Method of Linking Disabled Person with Suitable Occupations. N. L. Lloyd. —p. 102.
Study of Repetition of Accidents. D. Archibald and J. W. Whitfield. —p. 107.
Health Hazards of Pharmaceutical Industry. R. M. Watrous.—p. 111.

British Medical Journal, London

2:121-160 (July 26) 1947

Medicine in Post-War World. H. Lett.—p. 121.
Surgical Aspects of Amebiasis. P. Theron.—p. 123.
*Iodine and Failing Lactation. Margaret Robinson.—p. 126.
Acute Dilatation of the Stomach. B. Markowski.—p. 128.
*Bile Peritonitis in Infancy. E. D. Hindmarsh.—p. 131.
Berger-Khan Test for Syphilis. J. H. Fodden and E. J. Maddox. —p. 131

2:161-196 (Aug. 2) 1947

Part of Chemistry in New Therapeutics. H. Dale.—p. 161.
Anomalous Manifestations of Malnutrition in Japanese Prison Camps. R. G. S. Whitfield.—p. 164.
Temporal and Giant Cell Arteritis. K. Robertson.—p. 168.
Anastomotic Ulcer Twelve Months After Somervell Operation. H. Dodd.—p. 170.
Combined Action of Phenobarbitone and Epanutin. D. Blair.—p. 171.
Nomograms for Relative Humidity. G. H. Bell and J. B. deV. Weir. —p. 174.

Iodine and Failing Lactation.—During investigations on the part played by hormones in failing lactation Robinson discovered that large doses of dried thyroid gland caused a greater increase in milk yield per day in puerperal women than any of the other hormone preparations. This led to the trial of Lugol's solution, which was found to be even more effective. A total of 99 cases of failure to establish lactation in the puerperium were investigated. Seventy-two patients were used as controls and 27 were treated with compound solution of iodine. Six drops of 5 per cent iodine in 10 per cent aqueous potassium iodide were given by mouth in milk twice a day. This treatment was continued until the yield of breast milk had risen to 10 ounces (296 cc.) a day. On the thirteenth day of the puerperium the mean output of the patients taking compound solution of iodine was not much less than the mean output of the normally lactating women. In a woman with lumpy breasts the iodine treatment had to be stopped after twenty-four hours, because the breasts became painful. The authors conclude that failure to establish a satisfactory milk output in women is apparently due to two deficiencies—estrogens and iodine. The need for estrogens to control the milk flow through the breast is present in the first four days after labor; the need for iodine to increase the output of milk is present from the fourth day onward. These deficiencies may be present singly or together. If together, the estrogens must be given first.

Bile Peritonitis in Infancy.—Hindmarsh reports a case of bile peritonitis in a child aged 1 year and 10 months. Simple drainage in the region of the common duct effected an apparent cure. It is thought that there must have been a small cyst or aberrant duct which had ruptured; the abnormality must have been a minor one, as recovery was rapid and apparently complete. As an alternative cause, in view of the retroperitoneal edema, the author considered the possibility of a duodenal saccule which had ruptured, but the subsequent course of the case ruled this out. Remarkable features were leukocytosis and pyrexia suggesting an inflammatory cause; the bile was sterile.

Lancet, London

2:119-158 (July 26) 1947

*Carcinoma of Lung: Review on 122 Cases Treated by Pneumonectomy. T. H. Sellors, G. Cruickshank and B. R. Billimoria.—p. 119.
Bacteriology of Collection and Preservation of Human Milk. Joyce Wright.—p. 121.
Emotional Aspects of Skin Disease. G. G. Robertson.—p. 124.
Effect of Mass of Inoculum on Virulence of Bacteria Injected Intraperitoneally in Mice. J. M. Barnes.—p. 127.
Folic Acid in Megaloblastic Anemia After Total Gastrectomy: Report of a Case. M. E. Morgans, C. Rimington and N. Whittaker.—p. 128.
Failures in Cortical Bone-Grafting. V. H. Ellis, H. H. Langston and J. S. Ellis.—p. 128.
Anti-X and Other Low Temperature Agglutinins in Human Serum. E. N. Allott and C. A. Helman.—p. 130.
*Hepatic Dysfunction in Peptic Ulcer: Observations with Hippuric-Acid Test. H. Pollak.—p. 131.
*Staphylococcic Osteomyelitis of Spine in Baby Aged Three Weeks. P. G. Finch.—p. 134.

Carcinoma of Lung.—Sellors and his co-workers point out that more cases of pulmonary cancer are being recognized. The essence of early recognition lies in radiography. The type of growth has considerable bearing on the duration of the disease and on the possibility of surgical removal. The presence of secondary infection in the lung adds to the hazards but does not preclude surgical intervention. The only hope of successful treatment lies in radical surgery. The assessment for operation requires careful consideration. The respiratory and cardiovascular systems must be capable of withstanding the strain of a severe operation, and routine measurement of the vital capacity and pulse pressure should be made. Deficiency in the hemoglobin content should be restored by blood transfusions before operation is undertaken. In the cases seen by the authors the chest was opened in 246 cases and the growth excised in 130. Pneumonectomy was performed in 122 and lobectomy in the remaining 8 patients. Nineteen patients died after pneumonectomy and 1 after lobectomy. These figures include deaths occurring up to six weeks after operation. Local recurrence of the growth is a common cause of later death, the dead space becoming slowly filled with growth in twelve to eighteen months. Distant metastases may develop at any time. Although the results obtained leave much to be desired, the malignancy of the neoplasm cannot deter the physician from taking legitimate risks.

Hepatic Dysfunction in Peptic Ulcer—Pollak studied the hepatic function of 67 male patients with uncomplicated gastric or duodenal ulcer. The diagnosis of ulcer had been verified either by roentgenoscopic or gastroscopic studies. Quick's hippuric acid test was used. The data obtained indicated a tendency to depressed function of the liver in patients with peptic ulcer. The impairment of the hepatic function was greater during the active phase of ulceration. It is suggested that hepatic dysfunction may reflect a disturbance in the general metabolism and may lower the resistance of the gastroduodenal mucosa. Evaluation of the hepatic function is of importance in the preoperative management of ulcer patients, because the postoperative depression of hepatic function is more serious and the operative mortality is higher in patients with damaged livers. The detection of impaired hepatic function, which may be clinically unsuspected, is important in the estimation of the surgical risk and the selection of patients who may benefit from preoperative treatment. Serial hepatic tests are helpful to estimate the efficiency of such treatment and to determine the best time for operative intervention.

Staphylococcic Osteomyelitis of Spine in Infant.—Finch reports the case of a male infant aged 11 days when first hospitalized. The tip of his right middle finger was red and he had a temperature of 101 F. After a three day course of penicillin therapy the fever subsided but the finger was more red and swollen. On incision pus was evacuated. Three weeks later the infant was readmitted with the statement that a cold had developed a week earlier. Two days later he could not move his arms and screamed when his neck was moved. There was a complete flaccid paralysis of both arms, including shoulders and hands. Treatment with sulfamezathine was instituted. A month after admission a lump suddenly appeared in the midline of the back of the neck. It became larger and

V 1
194

fluctuant. Aspiration produced thick greenish pus, which contained large numbers of Staphylococcus aureus. The swelling was aspirated twice in the next three days, penicillin being injected on each occasion. On the last aspiration the fluid was brown and clear; after this the lump disappeared. Within a few hours of the baby's readmission radiographic examination revealed some erosion of the left transverse process of the fourth cervical vertebra. A week later this was more definite, and a lateral view showed erosion of most of the neural arches of the third and fourth cervical vertebrae with fusion by means of thin bone of part of the laminae, pedicles and spines of the third, fourth and fifth cervical vertebrae. Radiographic examination a week after discharge showed these three vertebrae fused irregularly and fully recalcified. There was never evidence of a sequestrum. The infective organism appears to have been derived from the paronychia, as these infections are nearly always due to staphylococci.

Acta Cardiologica, Brussels

2:1-112 (No. 1) 1947

*Research on Blood Pressure of Lesser Circulation in Man. J. Lenegre and P. Maurice.—p. 1.
*Wolff-Parkinson-White Syndrome: Evidence of Direct Septal Auriculo-ventricular Connection. M. Segers, T. Sanabria, J. Lequime and H. Denolin.—p. 21.
Unstable Form of Rhythm of High Auricular Frequency: (Flutter and Fibrillation). A. Jouve, M. Delaage and R. Bousquet.—p. 27.
Combined Displacement of Segments PR (PQ) and RT (ST) in Electrocardiogram: Clinical Significance. J. Lambert.—p. 37.

Pressure in Lesser Circulation.—Lenegre and Maurice measured the mean right ventricular pressure in 23 normal persons and in 155 cardiac patients by introducing a flexible catheter of exceedingly small size into a brachial vein and by pushing it gradually into the right ventricle. In normal persons the mean value of this pressure amounted to 15 cm. of water. In cardiac patients the right ventricular pressure may be within normal limits, but as a rule it is high; its level depends on the type of the cardiac disease. In 31 patients with mitral disease the mean right ventricular pressure was between 25 and 67 cm. of water, in proportion to the severity of the disease. In 13 patients with aortic incompetence the mean right ventricular pressure was 25.2 cm. of water; in 33 patients with coronary diseases, 25.5 cm. of water; in 27 patients with heart failure, 38 cm. of water; in 17 patients with congenital heart diseases, 38.2 cm. of water, and in 34 patients with chronic bronchopulmonary disorders associated with heart failure, 24.5 cm. of water. It was in this last group of patients that the highest single level of 80 cm. of water was observed. Thus the rise of blood pressure in the lesser circulation was more important than that generally observed in the greater circulation. It may serve as a guide in the prognosis of cardiac disorders.

Wolff-Parkinson-White Syndrome. — Segers and his co-workers report 1 case of Wolff-Parkinson-White syndrome in which the microscopic postmortem study of the heart revealed a bundle of common myocardial tissue connecting the auricle directly with the ventricle. This accessory route of conduction, located in the septal zone immediately below the atrioventricular node, explains the presence of a precocious invasion of the ventricle.

Acta Medica Scandinavica, Stockholm

127:501-608 (May 17) 1947. **Partial Index**

Blood Fats and Insulin Sensitivity in Diabetes Mellitus. H. K. Goadby.—p. 501.
Schistosomiasis in Southern Africa. F. G. Cawston.—p. 509.
Polyneuritis in Diabetes Mellitus. O. J. Broch and O. Klovstad.—p. 514.
*Study of Metabolism in Addison's Disease: I. Carbohydrate and Phosphorus Metabolism. O. Helve.—p. 543.

Metabolism in Addison's Disease. — Helve reports 7 patients with Addison's disease studied by himself and 25 patients observed at other hospitals. Forty healthy persons served as controls. The blood sugar values of the 32 patients varied between 50 and 130 mg. per hundred cubic centimeters, the mean being 93 mg. The glucose tolerance test carried out on 23 patients gave normal figures in 21 cases and reduced values in 2. Epinephrine tolerance tests carried out on 10 patients revealed a normal hyperglycemic reaction in 7 cases. There was a slight rise in the inorganic phosphate in the blood, but the total phosphorus was slightly reduced. Treatment with cortical extract did not influence the changes in certain phosphorus fractions. Dextrose administered by mouth, epinephrine intramuscularly and insulin subcutaneously produced no changes in the phosphorus fractions of the patients compared with the corresponding phosphorus values of the healthy control persons.

128:103-202 (June 6) 1947

Hyperparathyroidism. Operated Case Subsequently Necropsied. J. Hagtvet and W. Mathisen.—p. 103.
Studies on Diuretic Effect of Injectable Xanthine Derivatives. L. Kirstein.—p. 122.
*Cupola Tumors. S. G. Sjöberg.—p. 138.
*Arteritis Temporalis (Horton). (Symptom of Generalized Vascular Disease): Survey and Case with Glaucoma. T. Andersen.—p. 151.
Case of Isolated Congenital Dextrocardia. P. Arén.—p. 179.
Metabolism of Iron in Hemochromatosis. S. Frandsen.—p. 186.

Cupola Tumor.—Sjöberg suggests the term cupola tumor for Pancoast's syndrome or superior pulmonary sulcus tumor. He reports 5 cases with typical symptoms but varying pathologic pictures. The most important symptoms are brachialgia and Horner's syndrome. One of the cases demonstrated that the tumor is not always visible in the pulmonary roentgenograms and that necropsy may not reveal any visible connection with the lung. The author rejects the theory that cupola tumors are derived from branchial remains. The reported cases illustrate the poor prognosis of cupola tumors, especially when they are malignant and infiltrating. Roentgen treatment may have a palliative effect. The author stresses that it is important to consider the possibility of cupola tumor in every case of persistent brachialgia. In such cases it is essential to make roentgenograms of the lungs and to look for Horner's syndrome.

Temporal Arteritis.—Andersen reports the case of a man aged 54 who had violent pain in the nuchal region and in both temples. Symptoms of glaucoma developed. While the glaucoma was being treated the pain subsided almost completely. In spite of continued treatment of the glaucoma, the pain in the temporal region recurred and the vessels in this region became extremely painful and swollen. Microscopic examination of an excised portion of the artery showed severe inflammatory alterations. The author emphasizes that temporal arteritis is a frequent manifestation of a generalized vascular disorder. He thinks that the glaucoma in the reported case was due to involvement of the ocular veins. The prognosis is uncertain; 7 of 56 patients died; in 24 there developed ocular symptoms. Heparin or "dicumarol" therapy can be tried during the early stage of the disease.

Helvetica Paediatrica Acta, Basel

2:185-302 (June) 1947. **Partial Index**

*Wassermann-Positive Bronchopneumonia During Childhood and Its Various Manifestations (Fanconi-Hegglin's Syndrome): Contribution to Aspects of Miliary Bronchopneumonia and Virus Pneumonia. C. Gasser.—p. 185.
Congenital Diaphragmatic Relaxation with Special Consideration of Abnormal Position of Gastrointestinal Tract: 2 Cases. H. Zellweger.—p. 227.
Changes in Blood Proteins and in Plasma Volume in Toxicosis of Nurslings. E. Schwarz-Tiene and P. Menghi.—p. 242.

Wassermann-Positive Bronchopneumonia in Childhood.—According to Gasser Fanconi described in 1936 a new clinical entity, which he termed "the pseudosyphilitic, subacute, bilifugal bronchopneumonia of the neglected child." In 1940 Hegglin described "a Wassermann-positive pulmonary infiltrate" which occurred in epidemic form among military personnel. Later it was found that the same serologic changes may occur without pneumonic infiltrates. The author reviews the histories of 50 cases of Wassermann-positive pneumonia observed at the children's hospital in Zurich. The majority were presumably caused by a virus infection. An endogenic predisposition is apparently essential for the development of the symptoms plus the positive syphilitic reaction. Pairs of siblings who are ill simultaneously may differ with regard to the outcome of the Wassermann reaction. The frequency of an allergic family history, of catarrhal susceptibility and of stigma of degeneration indicate a constitutional factor. A virus origin cannot always be demonstrated. Owing to the nonspecificity of the antigens, a pseudosyphilitic syndrome can arise from diversified etiologic

factors. Quantitatively, the syphilitic reactions differ strongly and do not run parallel to the severity of the disease. Cold agglutination is seldom positive. Chemically, the blood shows a relative increase of the globulins. The erythrocyte sedimentation reaction is increased. The examination of the blood mostly reveals a neutrophilic leukocytosis with persistence of the eosinophils. Differentiation from tuberculosis, with which the process has considerable similarity, is possible on the basis of the positive syphilitic reaction; syphilis can be ruled out by the fact that the reaction becomes negative spontaneously. Differentiation from other forms of virus pneumonia and from Löffler's syndrome is difficult. Treatment with sulfonamide compounds and penicillin is ineffective but also unnecessary. No fatalities have been observed. A number of cases are reported to illustrate the various forms that the Wassermann-positive pneumonia may take: miliary bronchopneumonia, pneumonia following the administration of foreign serum, that associated with the measles and the like.

Khirurgiya, Moscow

1-94 (No. 1) 1947. **Partial Index**

Training Surgeons. I. G. Kochergin.—p. 3.
Permeability of Hematoencephalic Barrier to Penicillin in Normal and in Pathologic States. V. V. Kovanov.—p. 12.
*Intra-Arterial Infusion in Local Surgical Infections. T. F. Lavrova. —p. 18.
Effect of Denervation of Renal Pedicle on Motor Function of Duodenum. M. V. Borisov.—p. 22.
Late Excision of Infected Wounds. M. K. Kaputovskiy.—p. 27.
*Effect of Bloodletting on Late Results in Cranial Trauma. D. M. Grozdov.—p. 46.

Intra-Arterial Administration of Drugs in Local Surgical Infections.—Lavrova demonstrated that intra-arterial introduction of a medicinal substance reaches the lesion to be treated in greater concentration than when the same substance is introduced by the intravenous route. Her experience with one hundred and eighty intra-arterial infusions on 27 patients demonstrated that the method is simple and harmless provided the drug introduced is incapable of causing changes in the arterial wall. Lavrova used the sulfonamide compounds and nitromersol ("metaphen"). Intra-arterial introduction of 0.5 per cent of procaine hydrochloride ("novocaine") solution resulted in improvement of trophic disturbances developing in the course of traumatic wounds. Intra-arterial therapy is applicable only in the case of wounds of the extremities and the head. It is particularly indicated in slowly healing wounds with deficient local tissue reactivity.

Effect of Bloodletting on Late Results in Cranial Trauma.—Grozdov reports on 234 cases of cranial trauma treated by bloodletting. Removal of as much as 400 cc. of blood had little influence on the arterial pressure. The often dramatic improvement in the condition of a patient with cerebral concussion and increased intracranial pressure suggested that the effect was due to lowering of the venous rather than the arterial pressure. Bloodletting appears to relieve the venous stasis resulting from edema of the brain and compression of the sinuses. Actual determinations of the venous pressure demonstrated a decided lowering as a result of bloodletting. The author concludes that determination of the venous blood pressure furnishes more information about the state of intracranial pressure than the determination of the arterial pressure. A common sequela of cranial trauma, as observed in 82 patients followed up for from two to four years, was that of dizziness and headache. A follow-up study of the author's material showed that these complications were seen much less frequently than in patients not treated by bloodletting.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:1925-2004 (July 19) 1947. **Partial Index**

Febris Canicularis, a Peculiar Zoonosis. J. E. Minkenhof.—p. 1938.
*Treatment of Oxyuriasis with Phenothiazine. T. F. Bloem, J. K. Huysinga and G. C. Wilderink.—p. 1946.
Rheumatic Pneumonia. E. van Wijk.—p. 1953.

Phenothiazine in Oxyuriasis.—Bloem and his associates regard phenothiazine as an excellent remedy against oxyuriasis. The patient must be kept under close supervision before, during and after this treatment, and only preparations that have been tested for purity should be used. Hepatic and renal lesions and severe anemia are contraindications to this treatment. As an adjuvant the authors occasionally treated the anal area with a mixture of tumenol, zinc oxide and an anesthetic and prevented constipation. The treatment continues for two consecutive days and is repeated after three weeks. The authors used powders into which 1.25 Gm. of phenothiazine had been mixed. Children aged 2 to 4 years were given one powder a day, those 4 to 8 years two powders a day, those 8 to 13 years three powders a day, those 13 to 18 years four powders a day and adults six powders a day. A colorimetric determination of the excreted phenothiazine in the urine is described. One hundred and twenty-three patients were successfully treated. In 1 patient who had been given an overdose of the drug there developed hemolytic anemia.

Nordisk Medicin, Gothenburg

34:1333-1372 (June 13) 1947

Virus and Virus Diseases in Man. F. L. Horsfall Jr.—p. 1333.
Treatment of Hemolytic Reactions after Blood Transfusion. K. Henningsen.—p. 1341.

Hospitalstidende

*Aminophylline in Cardiac Disorders. C. Ståhl.—p. 1345.

Hygiea

Renal Injury in Sulfa Therapy and Question of Roentgen Opacity of Sulfa Concrements. T. Berglin.—p. 1355.
Purulent Sialadenitis of New-Born. K. L. Möller.—p. 1360.
Thyroiditis. G. Strandell.—p. 1362.
Case of Luxation of Lumbar Vertebra. K. Stenberg.—p. 1364.
Operative Treatment of Hemorrhoids According to Milligan. B. Snellman.—p. 1365.

Aminophylline in Cardiac Disorders.—Aminophylline dilates the coronary blood vessels, the blood vessels of the brain and cutaneous vessels, causing a fall in blood pressure and a rise in the minute volume. The drug was used in 104 patients, aged over 60, with heart disease. Of the 71 patients with cardiac dyspnea treated exclusively with aminophylline 21 showed marked improvement and 22 moderate improvement. Some patients with angina pectoris or coronary thrombosis seemed to be relieved. A diuretic effect was rare. Doses of about 50 cg. aminophylline, best in suppositories, are given once or twice (or three times) daily for an average of from one to three weeks. Oral doses in these amounts cause a marked cardialgia, while intravenous injections are dangerous because of the sudden fall in blood pressure. The addition of 20 cg. ethyl aminobenzoate prevents anal pruritus.

Paris Médical

2:369-376 (Aug. 2) 1947

*Penicillin in Treatment of Late Acute Nephritis Associated with Scarlet Fever. A. Raybaud, Éliane Garrouste and Moussion.—p. 369.
Laboratory Diagnosis of Salmonella Infections (Indirect Methods; Serum Diagnosis, Progress Achieved). R. Sohier.—p. 371.

Penicillin in Acute Nephritis Secondary to Scarlet Fever.—Raybaud and his co-workers report 2 cases of acute nephritis with oliguria, albuminuria and azotemia in a girl aged 5 years and a boy aged 4 years with scarlet fever. Two hundred thousand units of penicillin were administered daily. The temperature was restored to normal, the diuresis was increased and the albuminuria had subsided when treatment was discontinued after the fifth and eighth day, respectively. Penicillin therapy had to be resumed because of recurrence of symptoms. Complete recovery resulted from prolonged treatment with a total dose of 3,400,000 units. Penicillin proved completely devoid of toxic effect on the kidneys. Intramuscular administration of the agent is to be preferred to the intravenous route. Treatment should be continued for at least seven days with a total dose of 3,000,000 to 4,000,000 units.

Pediatria Prática, São Paulo

18:101-140 (May-June) 1947. **Partial Index**

*Intravenous Anesthesia ("Thionembutal") in Infantile Surgery. V. Alves de Carvalho Pinto and R. Vilhena Moraes.—p. 101.

Intravenous Anesthesia in Surgery of Infants.—Alves de Carvalho Pinto and Vilhena Moraes report on intravenous "pentothal sodium" anesthesia in 150 cases in infants and children. The majority of the patients were between the ages of 3 and

V 1
194

10 years. Pentothal sodium presents the same indications and contraindications in infants as in adults. Pentothal sodium anesthesia is safe for infants and children provided it is properly administered. The anesthetist should have a thorough knowledge of the earliest symptoms and signs of barbituric poisoning so as to be able to rapidly control any accident. The equipment is simple. The use of a valve of three routes makes possible the simultaneous administration of other liquids to the patient. A fresh 2.5 per cent solution of pentothal sodium is harmless to the vascular endothelium and does not cause complications from extravasation of the substance during injection. Anesthesia is rapidly induced and is tranquil and pleasant. It can be maintained at an optimal threshold with a wide margin of safety by intermittent, slow administration of the solution. The authors examined the urine, the blood and electrocardiograms before and after administration of pentothal sodium anesthesia; they found the anesthesia safe.

Praxis, Bern

36:537-548 (July 31) 1947

Recent Results of Treatment of Spontaneous Pelvic Presentation According to Bracht. W. Neuweiler.—p. 537.
*Penicillin Treatment of Mixed Infections in Pulmonary Tuberculosis. E. Stangl.—p. 540.

Penicillin in Pulmonary Tuberculosis.—Stangl treated 100 tubercular patients with penicillin. Reports of 7 cases of pulmonary tuberculosis in men between the ages of 24 and 48 years who had gangrenous bronchitis, pulmonary abscess, empyema, postoperative suppuration after thoracoplasty and infection after Monaldi's suction drainage are presented. Penicillin therapy alone or combined with sulfathiazole appeared to be the method which saved the lives of these patients while surgery and other drugs failed. There are cases which may be resistant to penicillin or in which bacteria susceptible to penicillin may be associated with others which are not, e. g., streptococci, staphylococci and pneumococci associated with Pfeiffer's bacillus, Hemophilus influenzae, in the respiratory tract. An indirect penicillin effect was attained in some of these cases. By controlling some of the mixed bacteria, sufficient defense power was set free to get rid of the remaining penicillin-resistant bacteria. The absence of untoward reactions and the rapid therapeutic effect of penicillin are emphasized.

Sang, Paris

18:197-260 (No. 4) 1947. **Partial Index**

*Study of Effect of Human Milk on Coagulation in Hemophilic Patients. M. R. Castex and A. Pavlovsky.—p. 197.
Hematologic Study on Normal White Rats: Morphologic and Numerical Results (Hemogram and Study of Bone Marrow). Suzanne Duvolon. —p. 205.
Aleukocytic Medullary Leukoblastosis. J. Bernard and N. P. Masse. —p. 234.
Variations of Sideremia and of Cupremia in Course of Regeneration of Anemia Resulting from Methionine. A. Lafontaine and A. Gajdos. —p. 242.

Effect of Human Milk on Coagulation.—Castex and Pavlovsky compared in vitro the effect of human milk and cream on the blood and plasma of hemophilic patients with that of the milk and cream of dogs, cows, goats and rabbits. The human milk and cream proved to be most active. They caused the greatest reduction of the coagulation time of the blood as well as the spontaneous coagulation of the plasma, making recalcification dispensible; the latter effect was due to the calcium content of the milk. A powder was prepared from the acetone extract of human cream, which contained 2.47 per cent of protein nitrogen. The protein content of this product was 15 per cent and was observed to be associated with phospholipids, which seem to play a more important part. Intravenous injection of the acetone extract of human milk (thromboplastin) produced shock in dogs and rabbits in spite of its effect on coagulation in vitro. This shock seems to be caused by the phospholipids, because it was not produced by the injection of the protein fraction alone. An increase in the coagulation time was observed during shock. Storing of the powder obtained by precipitation of human cream with acetone in the vacuum is the best method of conservation. This powder may be applied directly to wounds. Tampons soaked with a solution of the powder in isotonic sodium chloride solution were used for the effective local control of hemorrhage in cuts of the hands, epistaxis and after tooth extraction in hemophilic patients.

Schweizerische medizinische Wochenschrift, Basel

77:653-726 (June 28) 1947. **Partial Index**

Pharmacotherapeutic Action of Acetylcholine and Prostigmine in Biochemical Consideration. M. Guggenheim.—p. 657.
Relationship Between Hemoglobin and Chlorophyll. A. Stoll and E. Wiedemann.—p. 664.
Endocarditis as a Problem in Inflammation and Infection. A. von Albertini.—p. 670.
Various Forms of Cardiac Insufficiency. R. Hegglin.—p. 674.
Pathogenesis of Malignant Nephrosclerosis. H. von Meyenburg.—p. 677.
Acute Infantile Toxoplasmosis Encephalitis. E. Freudenberg.—p. 680.
*Acute Infectious Lymphocytosis. O. Gsell.—p. 682.
Thiamine Avitaminosis. E. Abderhalden.—p. 689.
*Familial Occurrence of Multiple Sclerosis. C. Maier.—p. 697.
Survey of Various Types of Insulin and Indications for Their Use in Treatment of Diabetes Mellitus. G. R. Constam.—p. 715.

Acute Infectious Lymphocytosis.—Gsell observed in 2 children with acute infection unusually severe lymphocytosis. This was the first observation in Europe of this infectious disease, which since 1940 has been repeatedly reported in the United States. On the basis of the characteristic blood picture with high leukocytosis and lymphocytosis it can be differentiated from infectious mononucleosis, from whooping cough with leukemoid reaction and from leukemias. The first child, aged 2, had an acute febrile infection with an exanthem resembling that of measles, mild conjunctivitis and bronchitis. The child recovered. Only the blood picture was unusual. Leukocytes increased to 56,000, 94 per cent of which were lymphocytes. The second patient was a boy, aged 8, who also had fever with exanthem and a leukolymphocytosis. The author concludes that the described acute infectious lymphocytosis is an independent disease entity caused by an as yet unidentified agent.

Familial Occurrence of Multiple Sclerosis.—Maier states that until 40 years ago it was generally accepted that no heredofamilial factor played a part in multiple sclerosis. Curtius in 1933 reported 89 families with several cases of the disease. Later Curtius and other observers cited additional evidence either of the familial occurrence of multiple sclerosis or of the concurrence of sclerosis with other organic lesions of the nervous system. Maier reports 3 cases of multiple sclerosis in a mother and her son and daughter. All were under clinical examination, and later came to necropsy.

Wiener klinische Wochenschrift, Vienna

59:409-424 (June 27) 1947. **Partial Index**

Symptomatology and Histology of Craniopharyngioma. F. Thibaut. —p. 409.
**"Duodenal Reflex" as Fatal Postoperative Complication. G. Hartmann. —p. 413.
Experiences with Anesthesia Produced by Intravenous Injections with Sodium Salt of 1-Methyl-5,5-Allyl-Isopropylbarbituric Acid (Narconumal). K. Lerch.—p. 418.

"Duodenal Reflex."—Hartmann reports 5 cases of acute dilatation of the duodenum following Billroth II gastric resection in asthenic men between the ages of 23 and 60 years. The operation was performed with the patient under local anesthesia, supplemented by ether in 2 patients. There was abdominal pain, rise of temperature and rapid pulse. Collapse and death occurred during the three postoperative days. Postmortem revealed an extensive dilatation of the duodenum, the contents of which were bloody and of thin, pulpy consistency; the mucosa was partly hemorrhagic, and superficial necrosis was observed in 1 case. Dilatation of the duodenum resulted from mechanical obstruction at the anastomotic stoma and at the hiatus of the mesocolon. The term "duodenal reflex" is suggested for the nervous reflex process elicited by overdistention of the duodenum, causing fatal collapse. Differential diagnosis from arteriomesenteric duodenal obstruction and from postoperative gastrointestinal paralysis caused by general anesthesia is discussed. The use of opiates in debilitated patients with tendency to enteroptosis is not advisable. Mechanical obstruction at the anastomotic afferent loop must be avoided during the operation.

Book Notices

Paravertebral Block in Diagnosis, Prognosis, and Therapy: Minor Sympathetic Surgery. By Felix Mandl, M.D., F.I.C.S., Professor of Surgery, Hadassah University Hospital, Jerusalem. With a foreword by Max Thorek, M.D., F.I.C.S., Professor of Surgery, Cook County Graduate School of Medicine, Chicago. Translated by Gertrude Kallner, M.D. Cloth. Price, $6.50. Pp. 330, with 20 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1947.

Twenty-five years ago Felix Mandl published a small monograph on paravertebral block; most of our present indications for this widely used procedure were outlined in this pioneer contribution. Now he presents a greatly enlarged volume with newer indications, newer points of view, together with a complete bibliography, which is a remarkable feat, since the author lost much of his clinical material in Vienna.

Paravertebral block used to be considered a tool of the vascular surgeon, who would use it as a preoperative test before sympathectomies or for the relief of vasospastic disturbances occurring during acute vascular occlusions. The author discusses, however, after an excellent description of the anatomy and technic of the method, the value of paravertebral injections in the differential diagnosis of painful abdominal conditions together with therapeutic implications. He devotes a chapter to the treatment of angina pectoris, of paroxysmal tachycardia, of pleural pain, pain due to inoperable carcinoma and many others. Throughout the book are interesting case reports, which are often more convincing than the mass of statistics from other sources.

There is probably no field of medicine or surgery which does not benefit from observations obtained after temporary sympathetic interruption. The author lists and extends these indications. Naturally there is room for argument with some of his indications. It is, however, a stimulating thought-provoking contribution which should be in the library of every progressive physician and surgeon. The illustrations are clear and diagrammatic. The translation is smooth but needs closer editing.

Psychiatric Interviews with Children. Helen Leland Witmer, editor. Contributors: Frederick H. Allen and others. Cloth. Price, $4.50. Pp. 443, with 6 illustrations. The Commonwealth Fund, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1946.

The author undertakes to describe the methods of psychiatric treatment of children in child guidance clinics. Dr. Witmer is particularly well qualified for her task, both as author and editor. Her status as "layman" is richly qualified by years of association with the training of psychiatric social workers and of activity of critical and research nature both for the Smith College for Social Work and for the Commonwealth Fund.

The book is written primarily for students of psychotherapy of children and for practitioners of child psychiatry. It consists of an introductory section by the editor, ten selected case presentations contributed by eight psychotherapists and a concluding commentary by the editor. The introductory section orients the reader as to the nature of child guidance and tells enough about child guidance clinic patients to make understandable the selection of cases presented. A thoughtfully organized section on "Relationship: the dynamic of therapy" undertakes to clarify the manner in which psychotherapists utilize their relationship with a child in the service of the therapeutic task. Here the author essays more perhaps than can be successfully dealt with in a brief chapter: too many nuances create confusion for all but the experienced.

The ten case presentations consist of the records of their interviews made by the therapists together with notes and commentary portraying the therapist's thinking, the rationale of his procedure, the meaning to him of his activities and of the child's responses and reactions. Six of the eight therapists have had personal analysis and clinical experience in psychoanalytic practice; the other two are trained in dynamic psychiatry. The children under treatment varied from relatively nonneurotic children to those showing serious neurotic disturbances.

The case presentations admirably delineate varying approaches to childhood disturbances in which the authors succeed in making clear the rationale of their procedure. While each case speaks for itself, Dr. Witmer, recognizing that no generalizations about psychotherapy for children can be made on the basis of the material presented, endeavors to draw conclusions about the nature of the cases, the diagnostic categories utilized by the authors, the handling to the therapeutic relationship and the termination of treatment.

This book is useful especially for the students and practitioners of psychotherapy for children. It will be of interest to others who have professional responsibility for care and training of children, particularly pediatricians and educators. It will not be fully understood unless the reader has some orientation in dynamic psychology, and its full implications can be appreciated only by those who have some experience in psychotherapy. It is a refreshing presentation of an important aspect of psychiatric work, particularly as represented in the operation of child guidance clinics, not found adequately described elsewhere in the literature.

Diseases of Metabolism: Detailed Methods of Diagnosis and Treatment: A Text for the Practitioner. Edited by Garfield G. Duncan, M.D., Director of Medical Division, Pennsylvania Hospital, Philadelphia, with Contributions by Walter Bauer and others. Second edition. Cloth. Price, $14.50. Pp. 1,045, with 167 illustrations. W. B. Saunders Co., West Washington Square, Philadelphia 5, 1947.

This well known textbook of metabolism will bring the reader strictly up to date concerning last minute laboratory and clinical data in the fundamental physiologic, biochemical and therapeutic approaches to metabolic disorders. This edition represents a thorough revision in the light of the most recent investigative work. The war years contributed vast changes to our knowledge of such subjects as nutrition, and the basic metabolic aberrations coincident to or responsible for disease processes. In this light any pathologic physiology has its metabolic component, and in this textbook the reader will find detailed discussions as far afield as diseases of the kidneys and hematologic disorders.

Sections devoted to carbohydrate, protein and lipid metabolism completely describe digestion, catabolism and anabolism, taking the student through the chain of molecular changes to the liberation of energy and excreted metabolites. Enzyme systems responsible for these molecular alterations are discussed fully and in detail. While this may be highly technical material for the average practitioner to wade through, a basic knowledge of the data presented here is becoming increasingly necessary for the practice of scientific medicine. Mineral metabolism, water balance, vitamins and avitaminosis are likewise discussed in detail. Dietitians and surgeons, to name a few, will find these chapters of interest.

One may take issue with the simple statement that diabetes mellitus is dependent on a disproportion between the requirements of the body for insulin and the capacity of the islets of Langerhans to supply these requirements. Conflicting investigative reports are quoted generously throughout the text but are notably absent in the discussion of the pathologic physiology of diabetes. As elsewhere, however, the remainder of the discussion is informative and up to the minute.

Professor Duncan and his topflight contributors have gathered together a fount of information of vital and fundamental importance and have presented it in an eminently readable and instructive fashion.

Les infiltrations du sympathique: Physiologie—indications—techniques. Par Maurice Luzuy. Préface du Professeur Leriche. Paper. Price, 375 francs. Pp. 200, with 24 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6e, 1946.

While, from a scientific point of view, this cannot have the blanket acceptance which the author demands, the work is not all bad. Well known disturbances of the sympathetic nervous system are included, though there is nothing new here. Sweeping claims are made for the injection treatment of hypertension (the splanchnic nerves), Buerger's disease, Raynaud's disease and the mega disorders, the causalgias and allied post-traumatic painful states.

The monograph, for the most part, is replete with fantasy. Many words are wasted describing the salutary effects of procaine infiltration of the splanchnic nerves for ptosis of the stomach, drainage of the gallbladder, anuria of unspecified etiology, sexual impotence in males and inflammation of the uterus and adnexa. It is emphasized that by infiltration of the superior

cervical ganglion the hypophysis is so stimulated as to cause menstrual dysfunction to become completely normal. Painless childbirth is effected by procaine block of the lumbar sympathetic ganglions. Infiltration of the carotid body is advocated as a specific method for the treatment of shock (surgical or traumatic), peritonitis, epilepsy, tuberculous laryngitis and tetany due to hypocalcemia. Herpes zoster and diabetes mellitus readily respond to this form of treatment. The author strongly advocates infiltration of the sympathetics for intractable pain due to cancer, stating that the results are far superior to chordotomy. From this it may be assumed that the chordotomies to which he has reference were ineptly and inadequately performed. Tuberculosis of bone, retinitis pigmentosa, hypophysial disorders such as the Laurence-Moon-Biedl syndrome, migraine headache, auricular fibrillation and bronchiectasis all respond to simple injection of the sympathetic nervous system with procaine. As a work in armchair medicine it is phenomenal. As a scientific work it does not merit consideration.

Clinical Practice in Infectious Diseases for Students, Practitioners and Medical Officers. By E. H. R. Harries, M.D., F.R.C.P., Medical Superintendent, North-Eastern Hospital (London County Council), London, and M. Mitman, M.D., F.R.C.P., Medical Superintendent, River Hospitals, London. With a foreword by Sir Allen Daley, M.D., F.R.C.P., Medical Officer of Health, London County Council, London. Third edition. Cloth. Price, $6; 22s.6d. Pp. 679, with 56 illustrations. William Wood & Co., Mount Royal & Guilford Aves., Baltimore 2; E. & S. Livingstone, 16-17 Teviot Place, Edinburgh 1, 1947.

One who reads only the preface to this edition cannot fail to be impressed with the scope of this book. There are discussions of many related topics which are not always included in association with the acute infectious diseases. An extensive revision has been made and a new chapter on the pneumonias and four short descriptions of other conditions have been added. The first seven chapters include infection and resistance, hypersensitiveness, allergy, anaphylaxis and serum reactions, the transmission of infectious diseases, diagnosis and epidemiology and control of infectious diseases. Following these are twenty-six chapters relating to specific diseases. In the one on poliomyelitis criticism of the Kenny concepts will prove gratifying to those who are unwilling to accept illogical and unscientific theories as realities. There are three chapters on management of infectious diseases and a concluding one on control of infectious diseases in hospitals. At the close of each chapter there is a list of excellent references. Throughout the entire book nothing seems to be lacking for completeness unless it is the absence of illustrations. This omission is in conformity with the views of the authors, who feel that photographs, even in color, unless exceptionally well done, are likely to be misleading to the student. However, there are fifty-six figures, twenty-eight tables and a number of diagrams. Any one specially interested in the acute infectious diseases, whether teacher, practitioner or student, should have this book.

What Is Psychology: A Basic Survey. By Werner Wolff, Professor of Psychology, Bard College, Annandale-on-Hudson, New York. Cloth. Price, $4. Pp. 410, with 39 illustrations. Grune & Stratton, 381 Fourth Ave., New York 16, 1947.

Dr. Wolff is a professor of psychology at Bard College. He dedicates his book to his students, and it is written in the spirit of informing the student. His effort is to expose to the student the multitudinous ways in which scholars have approached the complex field of psychology, and the difficulties they have in determining just what it is they should study and how to carry out their studies. Dr. Wolff's approach is dynamic; for him the objects of psychology are "the inner goals of man." His is a tolerant, discriminating survey that should serve to give the student an orientation, with indications as to the several directions to which he can turn, depending on his own interest. It is an excellent survey to put into the hands of the student in college. Whatever shortcomings the book may have in presentation of any given field, the student is spared the bias and distortion often encountered in textbooks in which the author feels that all the answers are to be found in one given approach, i. e. his own. One gains the impression that Dr. Werner's students must derive more than book learning in psychology out of contact with their instructor.

The Chronic (Second) Stage of Thrombosis in the Lower Extremities: Its Course into Crural Ulcer and Its Treatment. By Inge Birger. Translation into English by Ella Orr and George Wellard with the assistance of the author. Acta chirurgica Scandinavica Supplementum. [Akademisk avhandling som för vinnande av medicine doktorsgrad med vederbörligt tillstånd av Medicinska Fakulteten i Lund.] Paper. Price, 12 Swedish crowns. Pp. 110, with 21 illustrations. Lindstedts, Lund, 1947.

The author defines the second stage of thrombosis as being due to the venous insufficiency which persists after the first acute stage has passed. This results in edema, induration, eczema and ulceration. The number of patients who are crippled for years, if not for life because simple prophylactic measures have been neglected is startling, and Birger shows well controlled statistics of his own material consisting of 1,360 cases, all of which were in the "second" stage of thrombosis.

In this country such lesions are usually designated as being due to post-thrombotic sequelae, and up-to-date vascular clinics have treated them with anticoagulants, with vein ligations and with prolonged elastic support.

The author's material is a valuable control series, since most of his patients have suffered their acute thrombotic occlusion before the advent of anticoagulant or surgical therapy. While he indorses the rapid abortive treatment with heparin-"dicumarol," he is not in favor of ligation of the femoral vein, and many will agree with him on this point. He lays great emphasis on expert elastic bandaging of the edematous leg in the preulcerative stage, an art which many of the younger surgeons neglect or relegate to nurses.

There is an excellent chapter on traumatic thrombosis and its medicolegal aspects. This book is recommended for every physician whose work brings him in contact with thrombosis of the lower extremities.

Gastritis. By Rudolf Schindler, M.D., F.A.C.P., Clinical Professor of Internal Medicine (Gastroenterology), College of Medical Evangelists, Los Angeles. Cloth. Price, $8.75. Pp. 462, with 96 illustrations. Grune & Stratton, 381 Fourth Ave., New York 16, 1947.

The problem of gastritis is of great importance and has been a subject of controversy for many years. Any progress in the solution of this difficult disease is always of medical interest. Dr. Schindler contributes an excellent treatise. From his extensive gastroscopic experience he correlates the clinical and histopathologic pictures of the various types of gastridites with the intent of establishing a sound clinical basis for each disease. There is a summary of 55 case studies which are well selected and of intense interest. The colored plates and histologic sections are clearcut and very well chosen. This book is a real contribution and is highly recommended for the internist as well as for the gastroenterologist.

Elements of Surgery. By Fauset Welsh, B.Sc., M.D., F.R.C.S., Assistant Surgeon to the Birmingham United Hospitals, Birmingham. With a foreword by Sir Cecil P. G. Wakeley, K.B.E., C.B., D.Sc., Vice-President, Royal College of Surgeons of England, London. Cloth. Price, $2.25. Pp. 83. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E. C. 4, 1947.

The small volume is a compilation of surgical lectures given by the author to the nurses at the various Birmingham hospitals. The principles of surgery are presented in a simple yet adequate manner. Such topics as inflammation, ulceration, hemorrhage, shock, peritonitis, goiter and tumor are discussed in a lucid, easily comprehensible manner. Although originally intended for nurses, the book could be profitably read by medical students.

Forensic Medicine. By Keith Simpson, M.D. Fabrikoid. Price, $4.50. Pp. 335, with 114 illustrations. William Wood & Company, Mt. Royal & Guilford Aves., Baltimore 2, 1947.

The author of this small, compact volume is a lecturer in forensic medicine to Guy's Hospital in London and examiner in forensic medicine, University of London. He has succeeded in presenting here a short textbook designed to provide a brief and essentially practical guide, from an English school, to current teaching in forensic medicine. As has been the case of other more exhaustive treatises on this subject presented by English authors, much of the contents of the book will be of value to medical students and practitioners and to lawyers in this country.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HOW LONG MAY ESTROGENS BE ADMINISTERED?

To the Editor:—I should like to know how long it is considered safe to use estrogens of the theelin type or substitutes like diethylstilbestrol for the relief of (1) symptoms of the menopause and premenopause type such as "hot flashes," depression and nervous tension and (2) postmenopause symptoms such as senile vaginitis and vasomotor instability that continues five years or more after the cessation of menstruation. Whereas the average woman at the climacteric can usually be helped through this transition period with only six to twelve months of such therapy, an individual is occasionally encountered whose symptoms recur with all their original intensity when estrogenic treatment is discontinued and who is not fooled by the substitution of a placebo. I have in mind several women who are kept symptom free on 3,000 international units of amniotin a week by injection or 0.2 mg. of diethylstilbestrol a day by mouth but who promptly develop recurrence of distressing menopause symptoms when medication is withdrawn. In view of the carcinogenic implications of prolonged estrogenic therapy I am a little concerned as to how long it may be safely continued in such dosage.

M.D., Massachusetts.

ANSWER.—The only contraindications to the administration of estrogens over prolonged periods are (1) a familial or personal history of cancer of the genital or accessory sex organs or (2) the development of toxic symptoms such as nausea, vomiting or dizziness and evidence of overstimulation of the sexual tissues such as painful breasts and uterine bleeding. In the first category, estrogens should never be given, while in the second, it is feasible either to give rest periods between courses of estrogen therapy or to decrease the dosage so that these signs and symptoms are held in check. With the exception of those in the first category, patients may receive estrogens in the proper dosage for as long as they need it without fear of organic harm. It is true that while most women adjust to their ovarian deficiency after a period of months to several years, there is occasionally encountered a woman whose symptoms remain unabated even following correct therapy for a relatively great number of years even to an elderly age. In these instances there is no reason to deprive the patient of relief by discontinuing estrogen therapy; however, it is advisable to administer the estrogens for several months with rest periods of three to six weeks, depending on the length of time it requires for the return of the menopausal symptoms.

PSEUDOHERMAPHRODITISM

To the Editor:—A few days ago an 18 year old girl came to my office complaining of never having menstruated. She was masculine in appearance, with hair predominating on the chest, legs and face, and she showed many definite masculine mannerisms. Examination revealed, in the area where the clitoris should be, a penis developed about like that of a 15 year old boy. Posterior to this, in the area where the vagina should be, there was a small opening about an inch in depth having the outward appearance of the vaginal opening. A prostate could not be felt on rectal examination. The uterus was absent. There was a slight tenderness on pressure just above the pubis on both sides. With these outstanding masculine characteristics I am of the opinion that the girl may have both testes and ovaries. What would be the usual solution to this case?

M.D., Illinois.

ANSWER.—During the last few years there has been a definite change in the attitude toward pseudohermaphrodites. Formerly the chief emphasis was placed on deciding whether or not one of these individuals had male or female gonads. For this purpose an exploratory laparotomy was performed. If testes were found an effort was made by surgical operations to have the individual take "his" place in society as a male. If ovaries were discovered, the person was made to live as a female. In many cases this was contrary to the external sex characteristics and sexual and social inclinations of the person in question. This usually led to much unhappiness and trouble.

In recent years the attitude has been to perform only such operations as will assist the person to continue to live the life of a male or female as "he" or "she" prefers or feels inclined to do. There is seldom any need to perform an exploratory laparotomy to determine whether testes or ovaries are present. In the cases in which the pelvis appears to be entirely void of genital organs on bimanual examination an operation may be avoided by resorting to pneumoperitoneum as was done by Rubovitz and Saphir. However, regardless of whether or not internal genitalia of one sex or the other are present, if the individual is happily adjusted as a male "he" should be helped to continue living as a male, and vice versa.

Most likely the patient in question is a male hermaphrodite; that is, "she" has testes. Corroborative evidence of this might be the fact that the urethral orifice is at the tip of the penis instead of under the penis as in hypospadias. This point is not mentioned in the query. Neither is there any statement concerning the development of the breasts. Likewise there is no mention of the sexual inclinations of the patient—whether she is attracted sexually by males or by females or by neither. It would help to know if this youngster ever had a discharge of semen. The only female characteristic mentioned in this case is a small vagina.

If the patient's breasts are small and flat, if the urethral orifice is at the tip of the penis, which in this case is almost the size of a mature young boy (the difference in size between 15 and 18 years is often not great), and certainly if this individual's sex inclinations are toward females, "she" is almost certainly a male and should have been raised as a male. Even if this is true, the question of what to do now is not simple. Before any therapy is carried out a psychiatrist should interview the patient to determine whether or not a change in outward sex should be made. If the individual is to remain a girl, the "clitoris" must be removed, and shortly before marriage is contemplated a serviceable vagina will haye to be made. On the other hand, if the individual should decide to become a male, nothing need be done surgically except perhaps to close the small opening under the penis. If the decision is made for the patient to live the rest of his life as a male, remaining in the same community, many complications and considerable embarrassment will result, at least for a while.

MORPHINE WITHDRAWAL SYMPTOMS

To the Editor:—I had a patient with heart disease who had taken as much as 5 grains (0.32 Gm.) of morphine daily. It appeared that he could not recover from the heart condition. However, he did recover and I was faced with the necessity of withdrawing the drug. I did this successfully by gradual reduction in about one month. I should like to have information on the causes of withdrawal pains, also information on other drugs to use in helping such a patient. Please omit name.

M.D., Indiana.

ANSWER.—The location and the nature of the changes produced by the abrupt discontinuance of a large morphine dosage are not well understood. Incidentally 5 grains is not a large dosage for an addict if he has access to large amounts.

There is a tendency among some psychiatrists to attribute this syndrome to emotional disturbances, a view that must be based on a lack of experience with abstinence syndromes and a failure to keep up with current literature. It has been found and reported that decorticate and decerebrate animals show a definite abstinence syndrome; also that "spinal" animals show a characteristic syndrome in the hind limbs.

The most probable site of the manifestations is the vegetative nervous system, but what the changes are is not known. The individual behaves as though, owing to prolonged administration of large doses of morphine, some system has "forgotten" how to act, and as this system or function is unable at once to return to its premorphine level of activity when the drug is suddenly discontinued the abstinence syndrome occurs. It is interesting that many of the manifestations of the syndrome are the antithesis of the action of morphine, for example restlessness vs. quietude, mydriasis vs. miosis, pain vs. analgesia, vomiting and diarrhea vs. inactivity of the digestive system and sialorrhea vs. dryness of the mouth.

Until recently one could have said that morphine was the best drug in combating the abstinence syndrome. However, in May of this year the Research Department of the U. S. Public Health Service Hospital at Lexington, Ky., made a report on a new substance, methadon (6 dimethylamino-4-4-diphenyl-heptanone-3), originally known as 10820, soon to be obtainable under narcotic restrictions under the names of "amidone" or "dolophine." The work done at Lexington indicates that this substance may greatly simplify the treatment of the abstinence syndrome. By substitution of proper dosage of methadon for morphine, withdrawal is relatively simple. Details should be obtained from the hospital.

When morphine is the basic drug in the treatment of the syndrome other drugs, e. g. barbiturates, bromide, adequate chlorides, fluids and vitamins, parenterally when indicated, flow baths or sprays, massage, all are helpful.

Rapid withdrawal over a few days is preferable when the patient is robust and healthy. However, in the presence of some severe condition, cardiovascular disease for example, extreme caution must be exercised and slow withdrawal is necessary.

One must not overlook a concurrent dependence on some other drug, such as barbiturates or ethyl alcohol. The opiate abstinence syndrome may be adequately controlled, but the situation can be rendered serious by the occurrence of a grand mal seizure. Whatever routine is followed, one should always be ready to give a dose of morphine (or its equivalent) at the appearance of serious symptoms. An assumption that these are "nothing but" an attempt by an addict to obtain morphine may result in a fatality.

PAIN IN RIGHT UPPER QUADRANT

To the Editor:—A man aged 39 was first seen about midnight complaining of severe pain in the right upper quadrant associated with nausea but no vomiting. The pain, which had begun about forty minutes before I saw the patient, radiated around the ribs to the lumbar region. It did not go straight through into the neck or chest or into the groin. He stated that he sweat at the onset of the distress. He was groaning and rolling in bed. His skin was warm although not moist, the temperature was 98.4 F., the pulse rate 60, respiratory rate 22, blood pressure 160/86, and the chest and heart were normal. He is quite tender over the gallbladder region and states that his pain is located there. However, he is also tender over the right kidney posteriorly. A very large dose of morphine was required to relieve him. The next day he was free from pain but was weak and exhausted. His temperature then was 98.6 F., pulse rate 66 and respiratory rate 20. Physical examination is negative except for slight residual tenderness in the gallbladder region. The patient has had about four or five such attacks in the past year. They always come when he is at rest, either asleep, retiring or on Sunday when relaxing. He feels well between attacks. During the past year two intravenous pyelograms, two gallbladder studies, urine examinations, blood studies including serologic test, electrocardiogram and gastrointestinal studies were all reported normal. A complete study repeating the procedures was done. An x-ray of the thoracic and lumbar spine was reported negative. Fluoroscopy of the chest and diaphragm was entirely negative. While a tentative diagnosis of "biliary dyskinesia" is being entertained, it is my feeling that some other diagnosis might better explain his symptoms. Duodenal drainage was attempted but was not done because of the patient's inability to swallow the tube. I would appreciate an opinion.

M.D., West Virginia.

ANSWER.—The most likely possibilities in this case would seem to be the sudden distention of a hollow viscus, the movement of a calculus or the herniation and temporary strangulation of a loop of intestine. The movement of a calculus is quite unlikely in view of the careful search that has been made for both gallstones and kidney stones. A twisted ureter, so-called Dietl's crisis, can be extremely painful. This, however, is usually associated with a movable kidney and it is assumed that such a pathologic condition has been ruled out here. The occurrence of an intra-abdominal hernia must be thought of. The fact that the pain comes on most often when the patient is lying down would support this suspicion. Herniation through diaphragm or over one of the intra-abdominal ligaments could produce these symptoms and leave no trace behind if the condition should correct itself.

A retrograde pyelogram with manipulation of the right kidney might be helpful. A gastrointestinal examination with barium and manipulation of the bowel in the locality of the pain under fluoroscopy might yield some information. As a last resort, the "lightning pains" of tabes must be considered. An examination of the spinal fluid may be necessary to investigate this possibility completely.

SEDIMENTATION RATE IN CONGESTIVE HEART FAILURE AND CARDIAC INFARCTION

To the Editor:—Would you please verify, if correct, and give me references for the following two statements: 1. In the presence of congestive failure, especially a congested liver, the sedimentation rate may be normal even in the presence of a recent and "soft" cardiac infarction due to coronary occlusion. 2. In the presence of an organizing mural thrombus the sedimentation rate may be rapid even though an existing cardiac infarction possibly next to the mural thrombus is well healed.

S. J. King, M.D., Rochester, N. H.

ANSWER.—1. Congestive failure tends to produce relative polycythemia, and this in turn reduces the amount of sedimentation of the red cells. This effect could be of such a degree that the influence of a cardiac infarction in causing an acceleration of sedimentation would be counteracted.

2. The sedimentation rate tends to be accelerated whenever tissue is being broken down within the body. This explains the accelerated sedimentation rate which one encounters with cardiac infarction. If tissue such as a mural thrombus is being organized and the products are being absorbed, acceleration of red cell sedimentation may result and thus the returning normal rate in the presence of a healing cardiac infarction might be counteracted. Whether or not these effects would balance one another would depend on the extent of the respective reactive processes.

APIOTHERAPY FOR ARTHRITIS

To the Editor:—Have the stings of bees been used successfully in alleviating the symptoms of arthritis? Among the public it is a common belief. If this is true what would be an accepted form of treatment? Please omit name.

M.D., New York.

ANSWER.—Bee keepers have been said to be immune to arthritis and they have been known to dispense the stings of their bees to the sick. In Europe, places existed where rheumatic patients made pilgrimages for the sake of bee sting treatments. The natural venom of the bee contains a poisonous substance similar to cantharidin and a sapotoxin somewhat similar to that found in snake venom. The physiologic effects produced by injections of the venom of bees are said to be analogous to the effects of administering histamine.

Since the procedure employed for bringing about the stinging of patients by live bees is somewhat hazardous, methods for harvesting the venom have been developed, and purified preparations suitable for injection are now marketed under various trade names.

The technic generally recommended for bee venom therapy requires the injection of small amounts (usually 0.1 cc.) of the solution into the dermis so as to produce a wheal. The number of wheals induced at each sitting is gradually increased as the tolerance of the patient permits. Injections are given over the sites of the painful articulations.

The experiences of American physicians with bee venom therapy of arthritis have been varied. Some have been optimistic but, as most of the optimistic reports were based on uncontrolled studies, the results have not been widely accepted. In addition, most of the favorable reports have been open to the criticism that the exact character of the rheumatic disease treated has not been clearly defined.

Untoward reactions to bee venom therapy are fairly common and usually take the form of painful local swellings at the sites of the injections. Sometimes these swellings have been hemorrhagic. Occasionally moderately severe general reactions including headache, weakness, irritability and frequency of urination have been observed. Albuminuria has also been reported following this treatment.

On the basis of the evidence available at this time, bee venom therapy cannot be recommended. It is not now in use in any of the representative larger American rheumatism centers.

PAIN IN REGION OF COCCYX IN FEMALE

To the Editor:—A woman aged 35 has complained of pain in the region of the coccyx for months. This pain is felt chiefly when sitting down or standing up and when moving the trunk backward and forward while sitting. The patient looks like a textbook picture of endocrine obesity of the pituitary type; the hands and feet are small, and the fat is concentrated in the hips and abdomen. She weighs 200 pounds (91 Kg.) and is 57¾ inches (147 cm.) tall. She has a definite moderate cyanosis of the lips which has been present for at least three years. Pruritus ani and vulvae have been present for several years and have responded temporarily to radiotherapy. There are no linear striae, but the skin generally is of a dark pigment, somewhat bronzed, appearance, especially the face, similar to the pigmentation in Addison's disease. X-ray examination of the abdomen and coccyx shows no abnormality. The urine has shown a heavy albuminuria for three years, is negative for sugar and the specific gravity averages 1.010. The blood pressure is 150/95. The heart is not enlarged on physical examination or fluoroscopy. The hemoglobin is 12.5 Gm., erythrocytes number 3,640,000. Basal metabolic rate determinations were plus 10 and plus 7. The patient states that the bulk of her weight increase occurred during her last and only pregnancy three years ago, which was terminated by cesarean section at term with a normal child. The weight prior to pregnancy is said to have averaged 155 pounds (70 Kg.). My diagnoses in this case are Cushing syndrome and chronic nephritis. What further work up do you suggest? Are the albuminuria and other features described possibly due to a single clinical entity?

M.D., West Virginia.

ANSWER.—Generally speaking, the term Cushing's syndrome is reserved for patients who show this type of obesity together with hypertension, hirsutism, diabetes and osteoporosis. From the description of the patient one would be more inclined toward a diagnosis of pituitary dysfunction with obesity. It is likely that the pituitary disorder was precipitated by the last pregnancy. Cushing's syndrome, which implies the presence of a basophilic tumor of the hypophysis, sometimes improves under x-ray therapy. A pituitary obesity will respond only to rigorous dietetic management. A diagnosis of nephritis is suggested by the albuminuria, but to support such a diagnosis a search should be made for kidney elements and casts of various kinds; the nitrogen levels of the blood should be determined. A lipoid nephrosis should be ruled out and a Kahn or Wassermann test of the blood should be made if this has not already been done.

MUSCLE ATROPHY FOLLOWING LOSS OF INNERVATION

To the Editor:—Is the atrophy which accompanies loss of innervation to a muscle an atrophy directly dependent on lack of use secondary to loss of nerve control, or would atrophy occur even if electrical stimuli and passive motion equal to normal use were instituted?

M.D., Illinois.

ANSWER.—The cause of muscular atrophy after denervation is not known. Many theories have been presented to account for the loss of substance of a muscle after detachment from the nervous system, but none are conclusive. When a nerve fiber is divided, degeneration stops at the ending in the muscle but the end plate does not disappear. The muscle, however, undergoes rapid atrophy, with the muscle fibers shrinking in a few days. The rate of atrophy may vary, but in the average muscle the reduction of the total volume is to less than a half within a few weeks. Well defined chemical changes accompany this process. The muscle fibers are replaced by connective tissue and ultimately all fibers are lost. A similar atrophy takes place when muscles are deprived of the resistance created by their action against other muscles. The rate of wasting is almost as fast as that caused by denervation. A common example occurs when the achilles tendon is cut. Atrophy does not seem to be caused by overstretching, but the muscle may be severely damaged mechanically if it is continually elongated.

When muscle is denervated it becomes hyperexcitable and may show fibrillation. The fibrillation, however, does not, by a process of overactivity, cause the atrophy, for when quinidine is used to prevent the fibrillation the process of atrophy is not arrested.

Denervation atrophy can be reduced in amount, if not entirely prevented, by appropriate treatment. Galvanic stimulation of muscle, suggested by John Reid of Edinburgh a hundred years ago, is still the best way to treat muscle atrophy. Reid's observations have recently been confirmed by Gutmann and Guttmann and by many other modern investigators. The reason for this effect is not clear, but direction galvanic stimulation moves the muscle and thus tends to restore it to its normal state. When muscle fibers are made to contract by galvanism, they waste little, if at all. They should be made to contract against resistance, shorten and then stretch, as would occur in a normal action.

ANTICOAGULANTS FOR THROMBOSIS AND EMBOLISM

To the Editor:—Please give an opinion on the use of anticoagulants in long standing arterial thrombosis associated with hypertensive cardiovascular disease without failure or renal involvement. A moderate secondary anemia exists. The patient has had cerebral thrombosis with resultant paralysis for about eighteen months.

M.D., Connecticut.

ANSWER.—The evidence is quite clear that the anticoagulants heparin and "dicumarol" will prevent vascular thrombosis in the great majority of instances when they are used expertly. Most patients who have fatal pulmonary embolism and survive sufficiently long to be treated with anticoagulants do not have further pulmonary embolism. In almost all instances venous thrombosis is halted and pulmonary embolism does not occur when anticoagulants are used. There is increasing evidence that the anticoagulants are extremely helpful in the treatment of acute myocardial infarction, in preventing further myocardial infarction within a short period after the first one has occurred, and in preventing pulmonary embolism and peripheral arterial occlusion and venous thrombosis. There are few data available relative to the usefulness of anticoagulants over a long period of time, but it is reasonable to assume that they would be effective. The difficulty lies in using dicumarol over long periods, for it is necessary to control the administration with determinations of prothrombin in the blood at intervals probably not longer than twice a week. It is probable that the use of dicumarol would protect against further thrombosis in the case cited by the inquirer, but the difficulty in administration over a long period is a great handicap in the prophylactic use of dicumarol in such instances.

TREATMENT OF CHRONIC PROSTATITIS

To the Editor:—Please discuss the treatment of chronic prostatitis in a man aged 50. What is the value, if any, of streptomycin in this condition?

Herman Frack, M.D., Oak Park, Ill.

ANSWER.—Of the various methods that have been advocated and used for the treatment of chronic prostatitis, it is generally agreed that prostatic massage and the application of heat to the prostate are perhaps best. As yet conclusive evidence has not been presented concerning the value of streptomycin. Its value in the treatment of this condition, if it has any, would depend among other things on the type of organism which is causing the chronic prostatitis.

RADICAL CAUTERIZATION OF NOSTRILS NOT RECOMMENDED

To the Editor:—A girl, 13, with severe hay fever, has been under the care of an allergy specialist and has been tested and given ragweed and various injections. "Benadryl hydrochloride" (diphenhydramine hydrochloride) and "pyribenzamine hydrochloride" (tripelennamine hydrochloride) help some. The mother asked me whether cauterization of nostrils, to leave scar tissue, would be beneficial. I replied "no" but that I would write for information.

M.D., Florida.

ANSWER.—Cauterization of turbinates is not an accepted routine procedure in nasal allergy. When allergic methods do not produce the desired results one may consider the advisability of employing conservative cauterizing methods, chiefly chemical. Some degree of relief may be obtained in some patients of that type, but not in all. At any rate, the relief is usually temporary, lasting a few days to a few weeks. Radical cauterization with the intent of producing permanent scar tissue is a procedure fraught with many possible complications, such as asthma and sinusitis, due to the loss of the physiologic functions of the nasal tissues.

DETERMINATION OF FERTILITY IN MEN

To the Editor:—The answer to the query in The Journal Aug. 16, 1947, p. 1446, concerning the "Determination of Fertility in Men" by a country physician is to some extent erroneous. The answer, said to count the sperm by "filling a white blood pipet to the 0.5 mesh with seminal fluid and to use a solution of 5 per cent sodium bicarbonate and 1 per cent solution of formaldehyde as diluting fluid to the 11 mark on the pipet." It further advised to "count all the sperm in 1 square millimeter of the white cell counting chamber and to multiply this number by 10, then by 1,000 and then by 20 to obtain the number of sperm per cubic centimeter." It is much simpler to use as diluting fluid distilled water or sodium chloride, to which a drop of an aniline dye might be added. Counting leukocytes or spermatozoa in one large square (1 square millimeter) of the white counting chamber and multiplying by 200 (10×20) instead of counting all 4 corner squares and multiplying by 50 would lead to grave errors.

The correct way to count spermatozoa is simple. While observing the motility in a hanging drop, you can judge from the density of the sample whether to use a white cell or red cell pipet. Aspirate semen and dilute the semen the way you would handle blood. Fill counting chamber, and use the low power lens for counting. First, count all twenty-five center (red) squares, divide the total sum by 5, add four zeros if you diluted it 1: 200 (as erythrocytes) or five zeros if you diluted it 1: 20. Multiply by 1,000 to obtain the number of spermatozoa per cubic centimeter. Next, you count all four large corner (white) squares, multiply by 50 if you dilute 1: 20 (as leukocytes) or by 500 if you dilute 1: 200. Multiply by 1,000 to obtain the number of spermatozoa per cubic centimeter. If there is any discrepancy in the counts in the red and in the white squares, the whole procedure must be repeated. The final figure is the result of six counts in one Newbauer chamber. In addition, to express the number of spermatozoa per cubic centimeter it is essential to express their number per sample. Measuring the volume of the ejaculate is the first step in the assay. The normal minimum volume is 2 cc. and its average is 3.5 cc.

It is erroneous to state that "normally 1 cc. of ejaculate should have a minimum of 20 million sperm per cubic centimeter." The majority of men interested in this field state that the normal range is from 60,000,000 sperms to 120,000,000 sperms per cubic centimeter. More than one hundred stains have been recommended to demonstrate spermatozoa in a smear of seminal fluid. Of all methods available, the gram stain is definitely the least suited to differentiate the various forms of spermatozoa. We do not make smears of semen but films similar to blood films. The practitioner may just as well stain the slide the same way as he does blood films with Wright's stain. The results are satisfactory.

While the maximum number of abnormal forms should not exceed 24 per cent, it must be stressed that 300 cells are counted before one arrives at conclusions. Without experience, it is rather difficult to differentiate between normal and abnormal sperms. If the practitioner feels that the task is beyond him, he should send unstained films of semen together with a complete history and other findings to an authority in the field of sperm morphology.

The final statement in the answer to the query "that lack of motility does not always indicate sterility" is of little help to the inquiring doctor. In a fresh sample, about 80 per cent of all sperms should be "normally motile" and after four hours 40 per cent. Decrease in these numbers indicates a decrease of fertility.

O. J. Pollak, M.D.,
Wilmington General Hospital,
Wilmington, Del.

To the Editor:—In the August 16 issue of The Journal, page 1446, in answer to an inquiry on determination of fertility in men, it was stated that normally the ejaculate should have a minimum of 20 million sperm per cubic centimeter. While theoretically pregnancies may occur in instances in which the husband's seminal fluid contains as low a sperm concentration as this, it is probably not very common. In my experience pregnancies have seldom occurred when the husband's count is considerably less than 50 million per cubic centimeter, and I feel that most normal men's semen specimens contain counts of double this figure. The American Society for the Study of Sterility, in its review of Minimal Standards, lists the average normal concentrate as 60 million or more per cubic centimeter. If counts in the region of 20 million sperm per cubic centimeter were to be considered within normal limits, many infertile men would probably be excluded from further investigation in cases of barren marriages.

Edward T. Tyler, M.D., Los Angeles.